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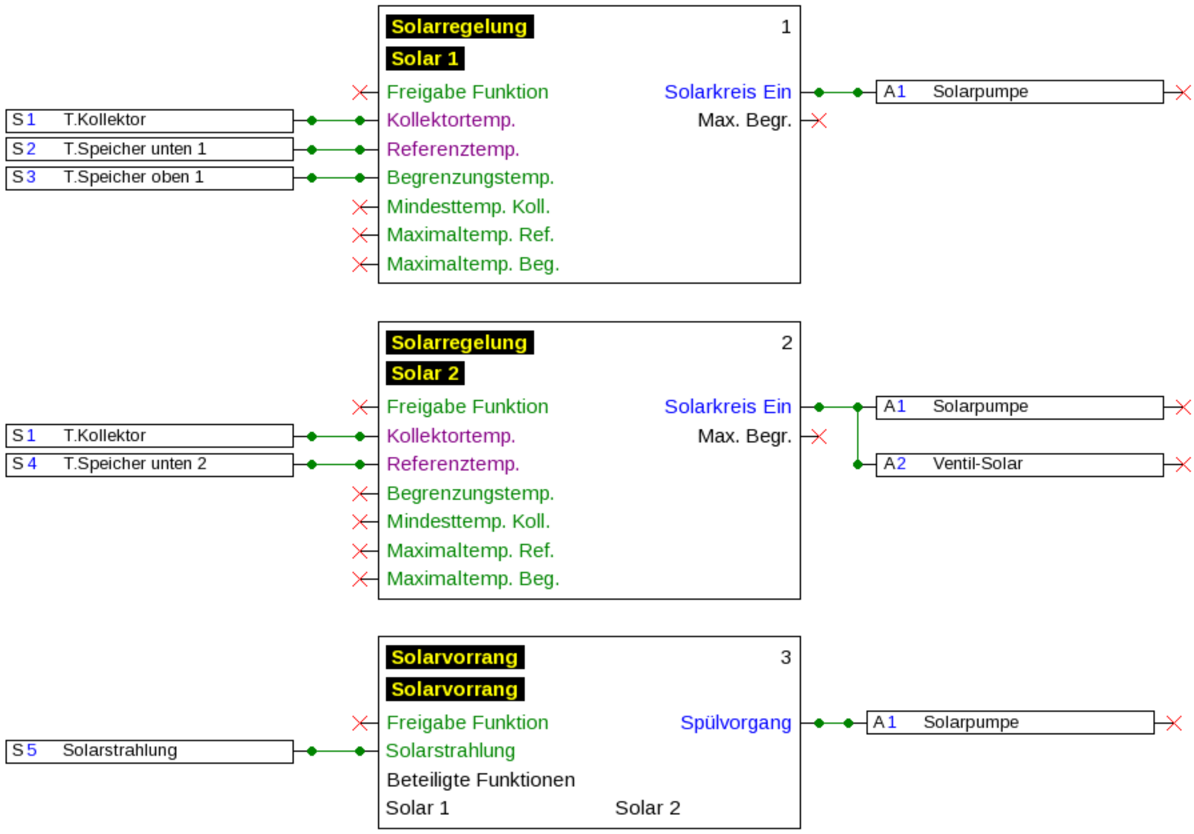
TAPPS2

PROGRAMMING SOFTWARE

Version 1.20



Manual Version 1.20

English

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Description

TAPPS2 is a vector-based drawing program which was developed for planning and programming of the UVR1611 and UVR16x2 controllers, the RSM610 control module, CAN-I/O45 and CAN-EZ2.

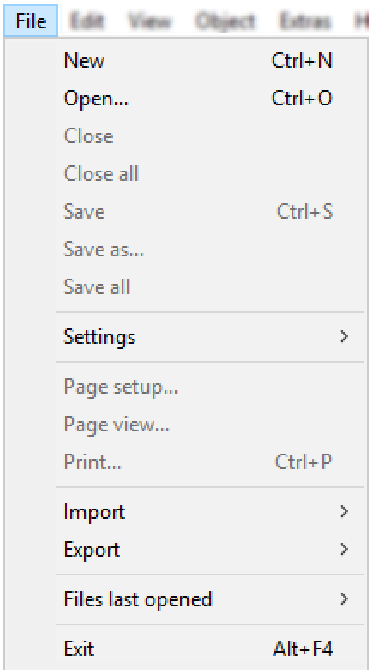
A configuration created with **TAPPS2** can be converted into a data format that can be loaded to the controller via the C.M.I. interface or the SD card of the UVR16x2 or the CAN-MTx2 CAN monitor.

This manual only describes the necessary tools and procedures that are required for the graphical creation of programming or hydraulic drawings.

Neither the principles of control technology nor a precise description of the individual function modules are covered by this manual. Please refer to the controller operating instructions for information on function modules and their operation.

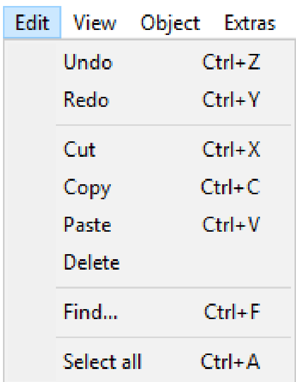
Menu overview

File menu



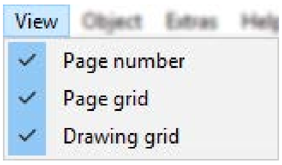
- Creating a new file
- Opening an existing file
- Closing one or several files
- Saving one or several files
- Settings
- Page set-up, page view, print
- Importing of small graphics/images
- Importing function data
- Exporting function data and documentation
- Display of projects opened last

Edit menu



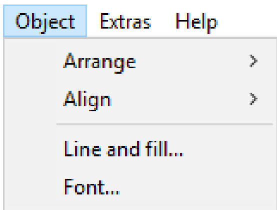
- Undo / Redo processing steps
- Cut / Copy / Paste / Paste CAN outputs as correspondingly converted CAN inputs / Delete selected objects
- Finding objects / Select all links of the selected object

View menu



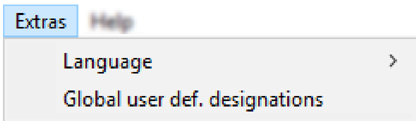
- Selection of display of page number, page grid and drawing grid

Object menu



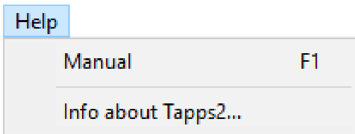
- Arrange and align objects
- Line type and fill selection (global selection for the entire **hydraulic** drawing and for drawing elements under programming)
- Font selection (global text formatting)

Extras menu



- Language selection
- Generating multilingual user defined designations

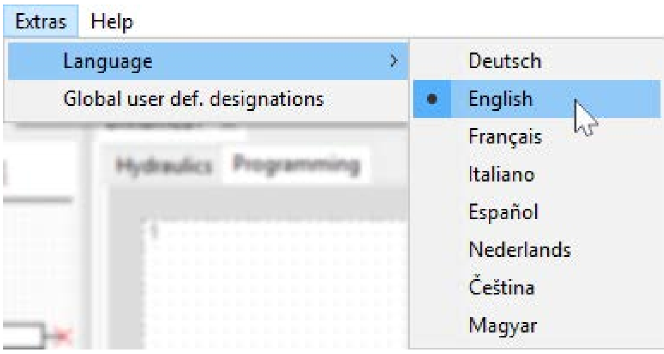
Help menu



- Display of the manual
- Information about TAPPS2 version

Language

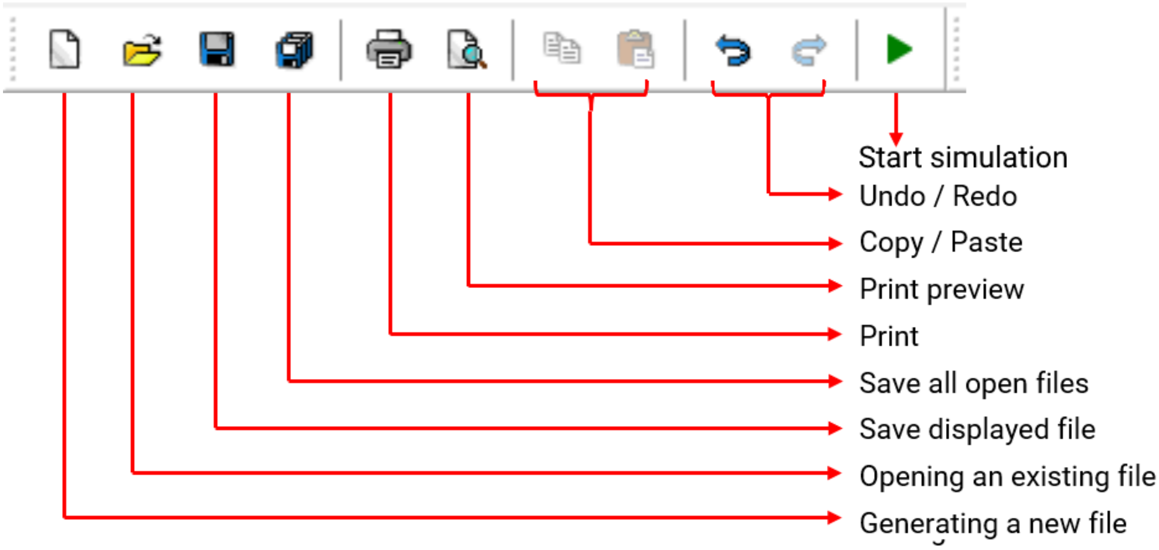
A number of languages are available for selection. Select **Extras \ Sprache** (Extras\Language) and click on the required language. ***TAPPS2*** must be restarted for the language choice to come into effect.



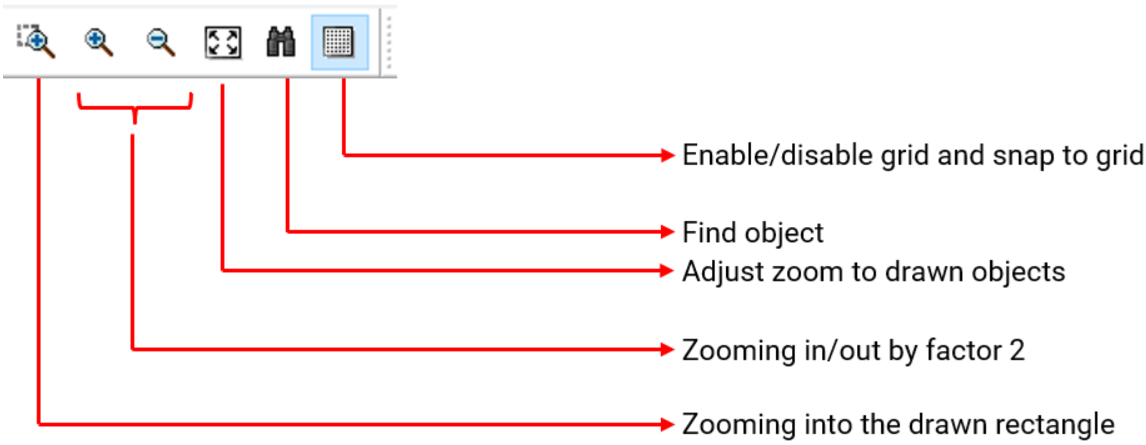
Tool bar

Frequently used actions can be started with a single mouse click on one of these icons.

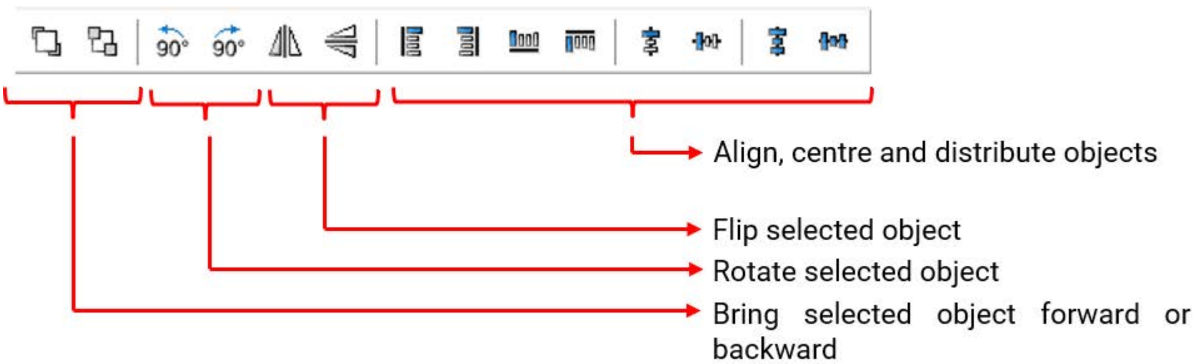
Part 1:



Part 2:



Part 3



Tool bar on the right

Selection mode for inserting objects, setting object parameters and creation of link lines

Node mode to create linking nodes

Editing mode to edit lines

Text mode to paste and edit texts

Draw polygons

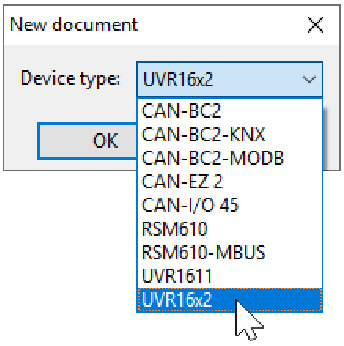
Draw polylines

Draw rectangles

Creating, opening, saving files

Generating files

A new file can be generated with icon from the tool bar or **File / New…**. The device type is defined in the following window:

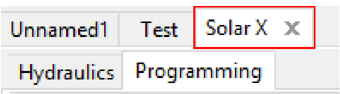


Opening existing files

An existing file (*.tdw) can be opened with icon from the tool bar or **File / Open…**

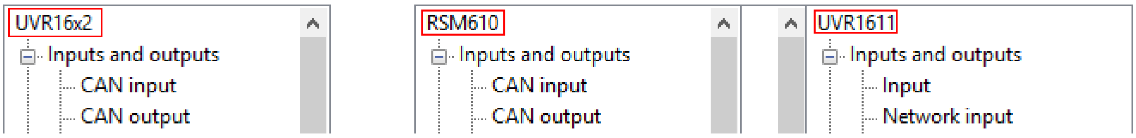
Several files can be opened simultaneously. The opened files are displayed in the tab, at the top above the drawing area. The drawing area which is currently visible is highlighted.

Example: Programming Solar X is currently displayed



Below this, you can switch between the hydraulic drawing and programming for the file displayed.

With **File / Files opened last**, the required file can be selected from a list of the files most recently opened.
The associated controller type can be seen in the search tree when "Programming" is selected:



Saving files

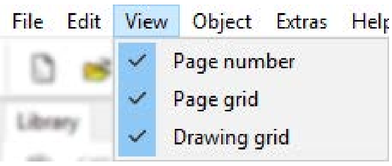
The displayed file can be saved with from the tool bar or **File / Save**.
If no name has been allocated to the file yet, a name will be allocated during the first save.
All opened files can be saved with or **File / Save all**.

Saving changes should also be carried out **regularly** during work in order to avoid a greater data loss in the case of malfunctions (computer crash, power failure).

File / Save as... can be used to save an opened file with another name and edit it further.

Drawing Interface

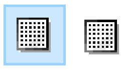
View menu



The settings in the **View** menu can be used to structure the drawing interface.

Page grid and **page number**: This distribution and numbering facilitates a clear print of the program. You can thus take into consideration the limits of the individual pages while drawing the program and prevent overlapping of objects across page margins.

Drawing grid: The drawing grid achieves a clear arrangement of objects and safe linking of the objects with the link lines. The objects and lines are aligned along the grid. Snapping the lines to the linking points is facilitated by the automatic snap mode.

The grid can also be switched on or off in the tool bar: 

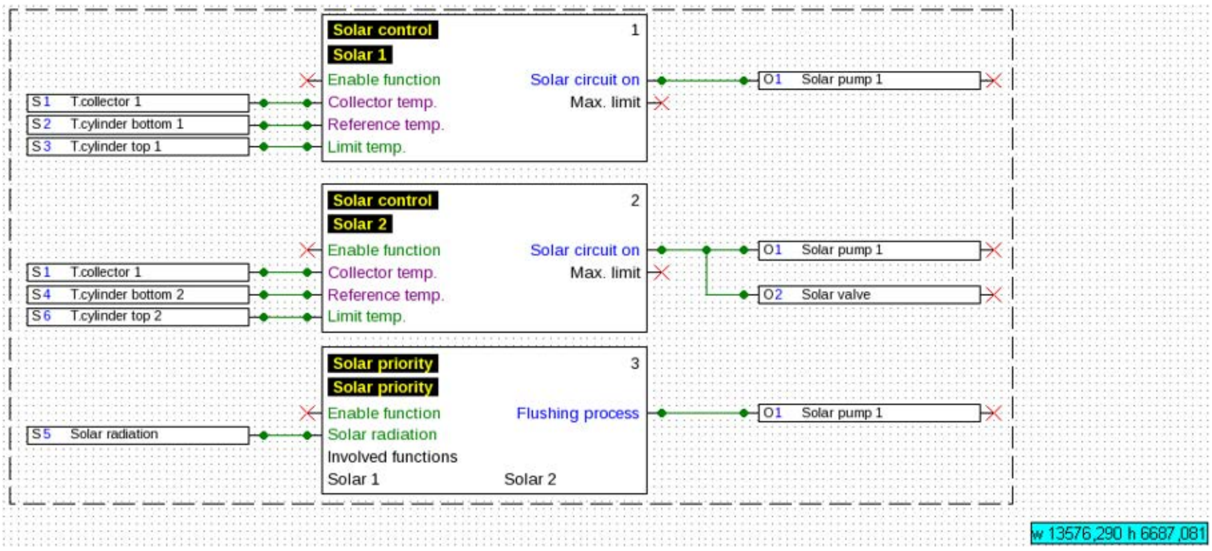
Zooming

Zooming with the scroll wheel

The scroll wheel enables fast and easy zooming whereby the position of the cursor is the fixed point of the zoom.

Zooming with tools from the tool bar

 Clicking on this symbol changes the cursor. You can now draw a rectangle across a group of objects which are then zoomed to the size of the drawing interface.

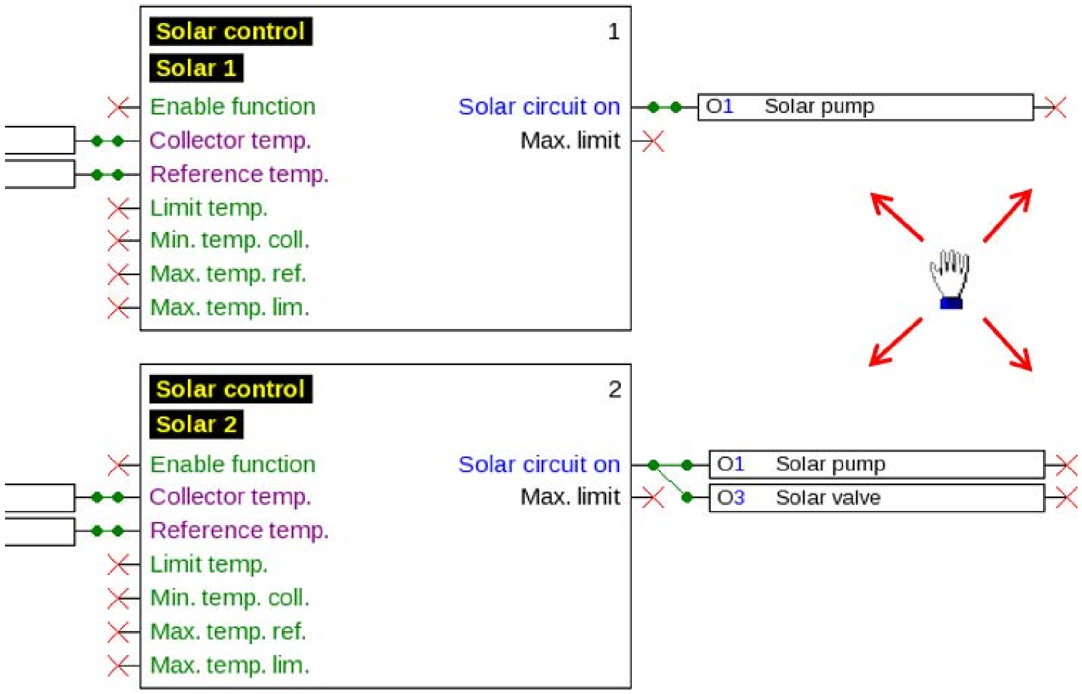


 If you click on one of these symbols, the drawing is zoomed in or out by a factor of 2. If a drawing area is selected, the fixed point is the centre of the selected section; without selection, the centre of the display area.

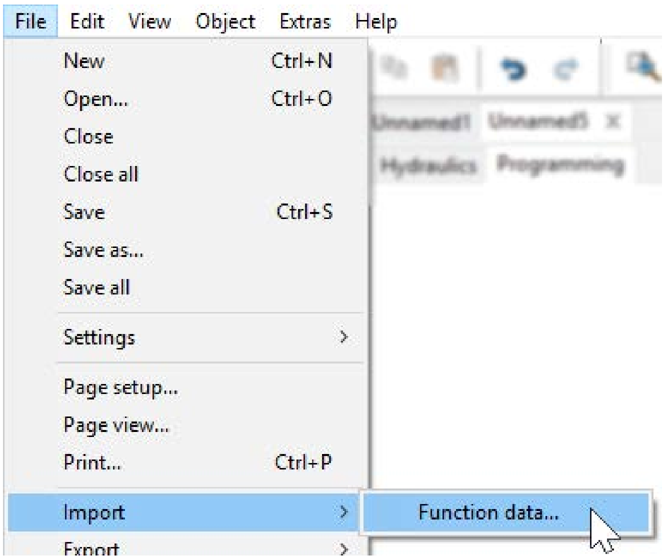
 With the help of this tool, you can adjust the view to the size of the drawn program.

Moving the drawing area

The drawing area can be moved in any direction by holding down the **right mouse button**.



Importing function data (*.dat)



File / Import / Function data... allows function data (*.dat files) to be pasted into a drawing.

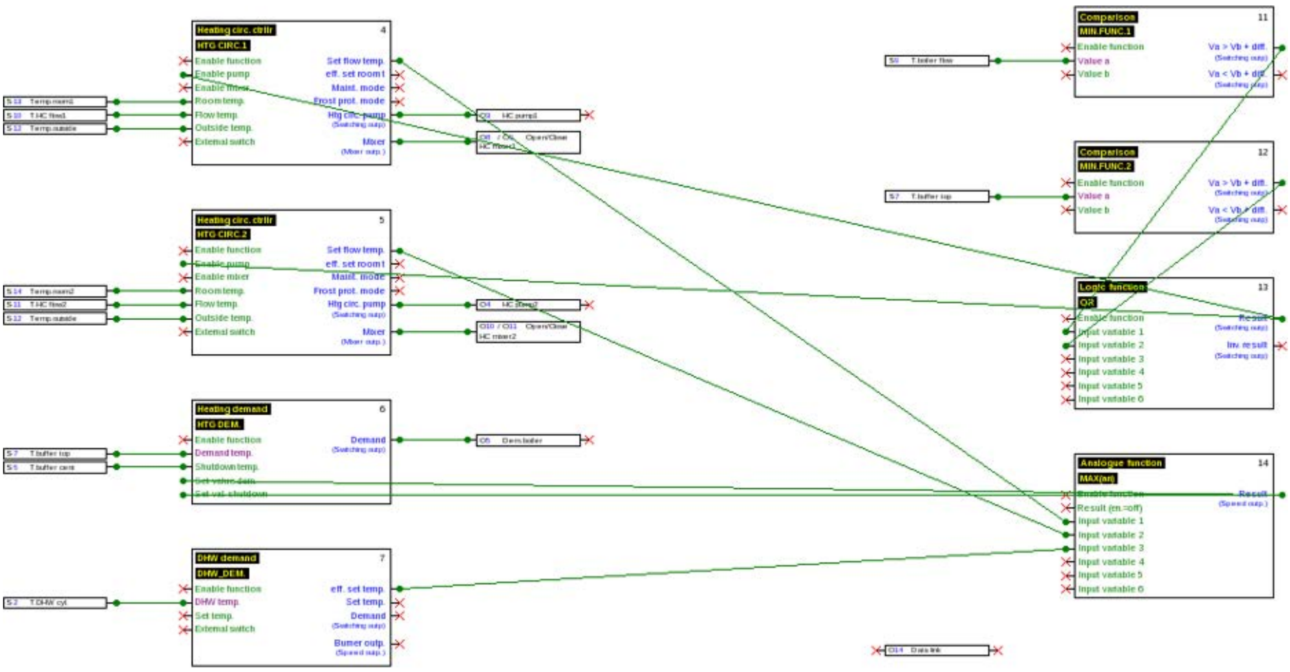
Instructions for function data for UVR1611: In order to be able to import function data into TAPPS2, these must have been created with TAPPS V1.25 or higher. To be able to import older programs (*.eng/*.par) into TAPPS2, their function data (*.dat) must have been re-created with TAPPS 1.29.

Any **default settings** (function overview UVR1611, CAN data logging, device settings, etc.) are overwritten. The functions are embedded in the new drawing **page by page**. The **sequence** of functions is sorted in numerical order.

When copying old TAPPS programs to an UVR 1611, it is therefore sensible to check the sequence. With **Sort functions...** sequences can be changed in TAPPS 1.xx in order to optimize the arrangement in TAPPS 2.

If the original program used **signal transmissions** and **transfers**, then they will now be displayed as link lines.

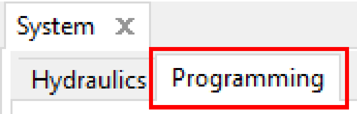
Example of a function data import:



Programming

Function data is created under "**Programming**", which is displayed under the file name.

Example:



Procedure of programming

1. Generating a new file opening an existing file for further editing.
2. Paste required elements (inputs/outputs, functions, etc.) into the drawing and position accordingly.
3. Set input and output parameters.
4. If available: set network input and output parameters.
5. Link these elements graphically with lines.
6. Set function and message parameters.
7. Make settings (depending on controller type: device settings, sort functions and messages, create function overview, adjust CAN data logging)
8. With **Export** from the logical circuit diagram, create the *.dat file (function data) for the controller.
9. Transfer the function data via interface (BL-NET or C.M.I.) or SD card to the controller.

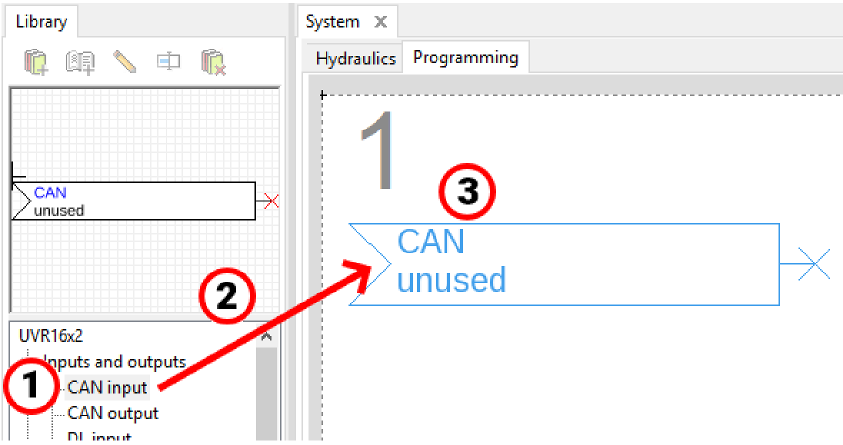
Function data objects

General information

Pasting obejcts into the drawing

Objects can be pasted into a drawing in two ways:

1. Directly from the search tree

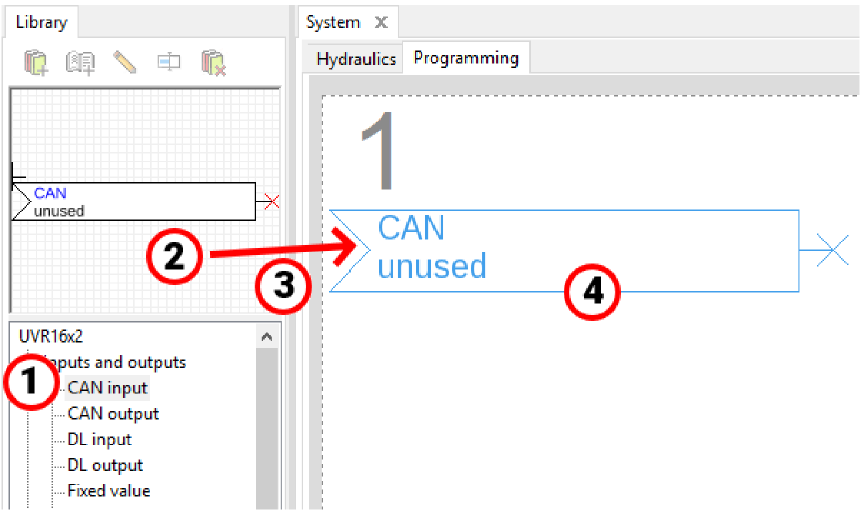


1 Select the object

2 Move the cursor to the required position

3 Mouseclick

2. From the icon preview (with **drag & drop**)



1 Select the object

2 Mouse-click into the preview field

3 Move the cursor to the required position while holding down the mouse button

4 Release the mouse button

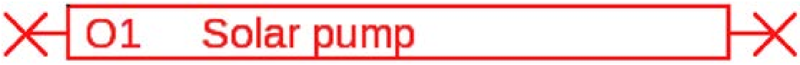
All objects, including functions, can be embedded in the drawing in the same way.

A double click on an object opens its parameter menu.

Selecting

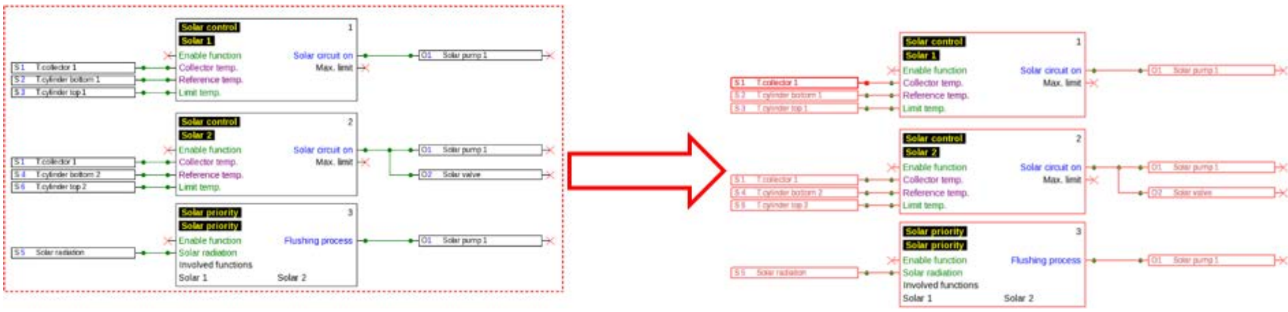
A **simple click** on the object in the drawing selects it. The object is then coloured red. It can now be moved or aligned.

Example: Output



Selecting several objects

1. Selecting several objects in sequence whilst holding down the Shift key.
2. Dragging a frame whilst holding down the left mouse button can select an entire group of objects:



Moving objects

Selected objects or object groups can be moved with the mouse button held down or with the arrow keys of the keyboard. With an active grid, the objects are aligned on the grid after moving them.

Undo / Redo

The tools  in the toolbar make it possible to undo or redo programming steps.

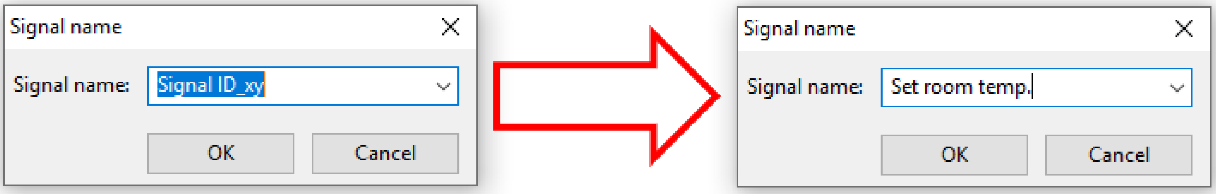
Signal transfer and acceptance

A logical connection can thus be realised without having to draw the appropriate line of a link across the entire page of the drawing.

Example:

Signal transfer

Window for entering the signal name following a **double click**

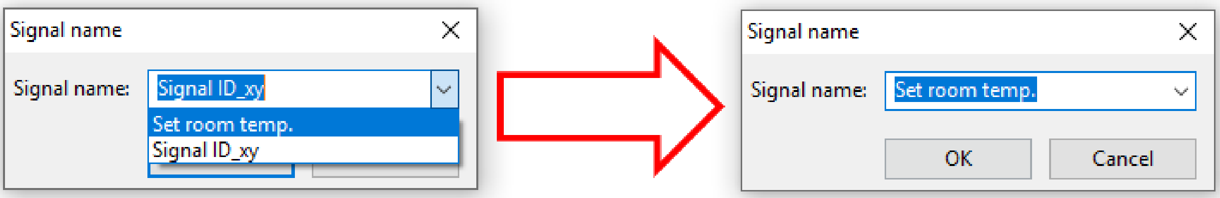


Overwriting the predefined signal name "Signal ID_xy" with the required name and complete with **OK**.

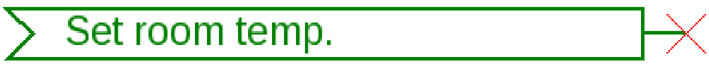
View of **signal transfer** after entry of the name

Signal acceptance

Entry window for signal name after **double clicking**



Selection of the saved name and completion with **OK**.



View after selecting the name

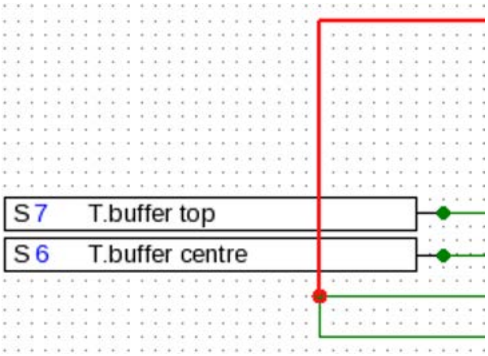
If multiple objects in the drawing are selected, the signal name for all selected signal objects is defined in the dialogue.

Moving object to the back or the front

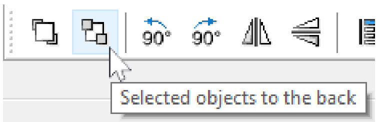
This tool in the tool bar makes it possible to move objects in front or behind each other.

Example: A line crosses inputs and should be behind the inputs after drawing.

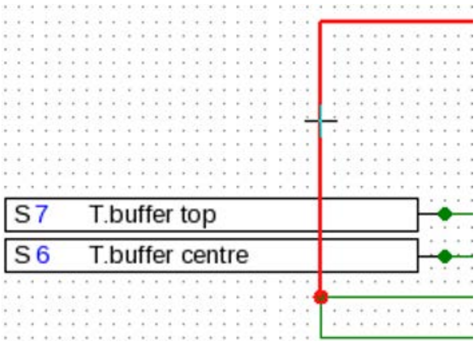
1. Select the line



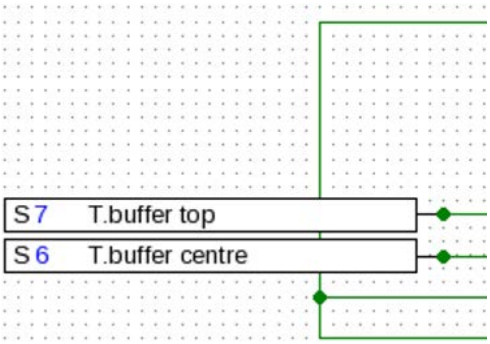
2. Select the tool in the tool bar (**Selected objects to the back**)

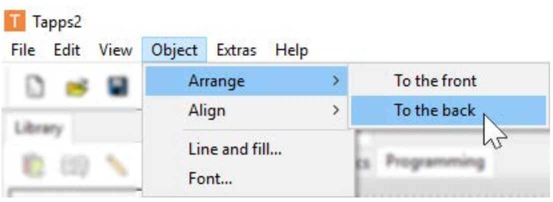


3. Click on the line with the changed cursor (+)



4. The view has changed:





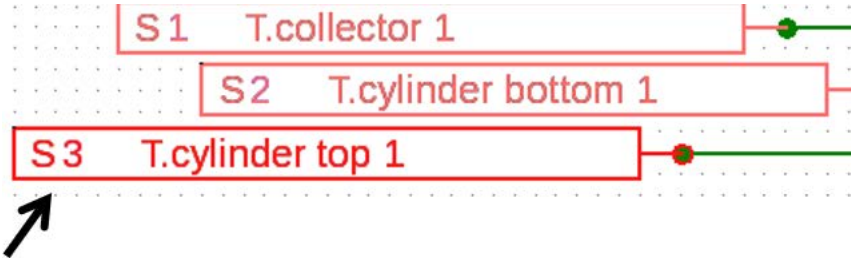
This action can also be carried out with **Object / Arrange / To the back**.

Aligning objects in the drawing

With the help of these functions, is it possible to align objects according to specific criteria.

Example: Left adjust 3 inputs

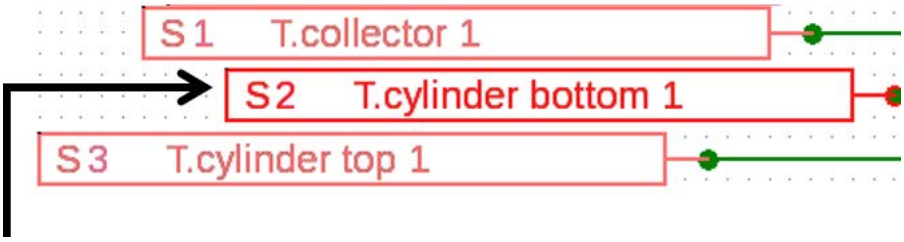
1. Select the group of objects to be aligned (hold down Shift or with a selection frame)



The selection of the object that is **align left** (S3) is selected automatically. The group is aligned on this specially selected object.

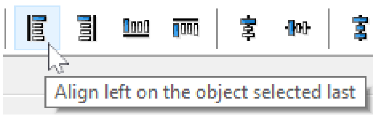
If the alignment is to be on **another** object, then this object is selected with two **individual** mouse-clicks **whilst holding down Shift**.

Example: Alignment on sensor 2:

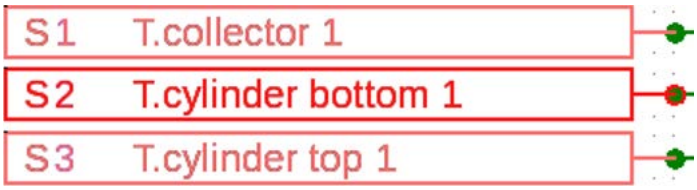


The sensor S2 is now highlighted.

2. Selection of the alignment method (in this example: "**Align left on the object selected last**") with a mouse-click



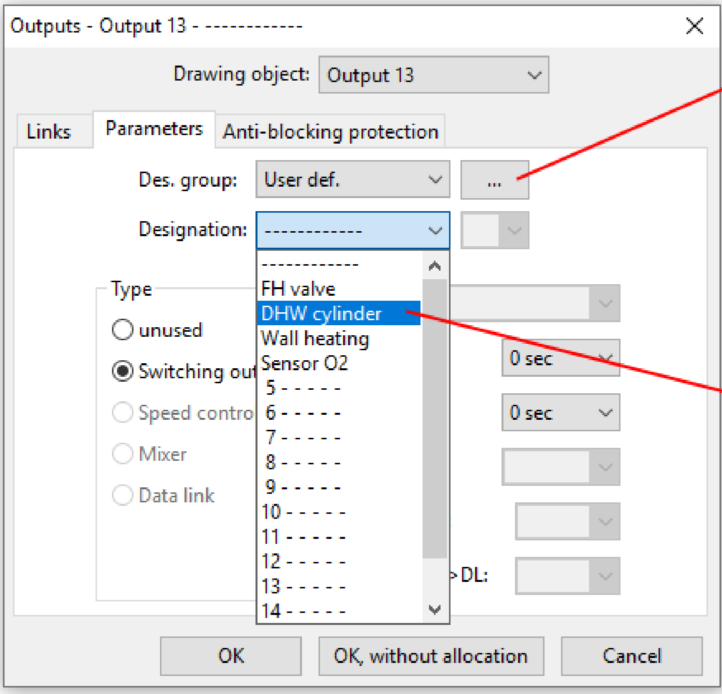
3. The sensors were aligned on sensor S2:



This action can also be carried out with "Object / Arrange / Align Left".

Function data objects for UVR1611

Application of user-defined designations

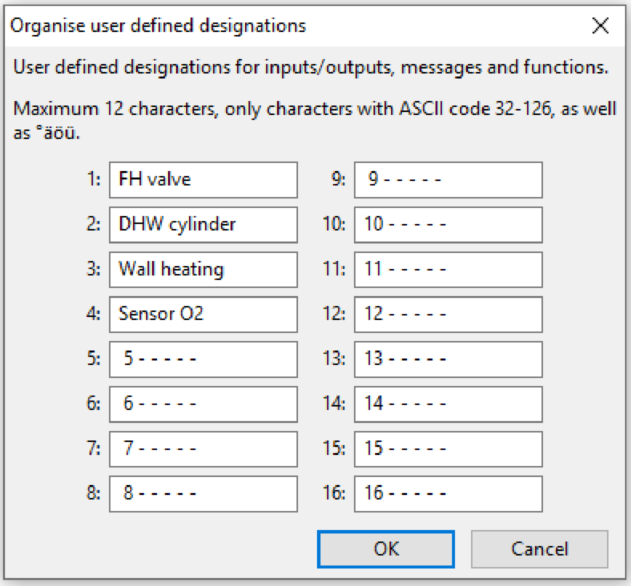


A click on this field calls up management of user-defined designations.

Up to 16 designations can be defined, which can be allocated to inputs, outputs, messages or functions as required.

These can be selected from the list following the definition of the required designations.

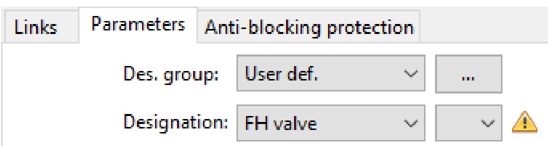
Example: Management of user-defined designations



The designation must **not exceed 12 characters** and must not contain special characters or umlauts.

However, for **functions** displayed on the UVR1611 **only 9** of the maximum 12 possible characters can be displayed.

Double designations

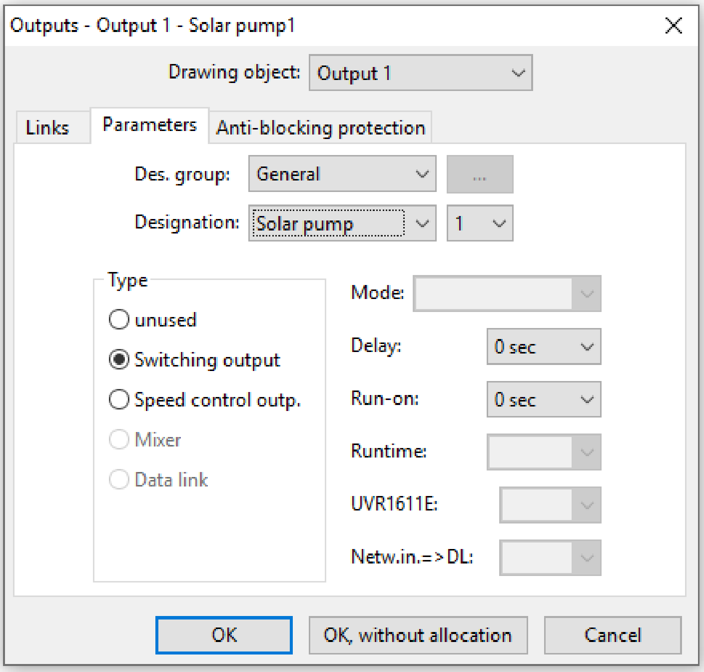


If a designation is selected for an object that has already been allocated before, a **warning triangle** will be displayed.

Outputs

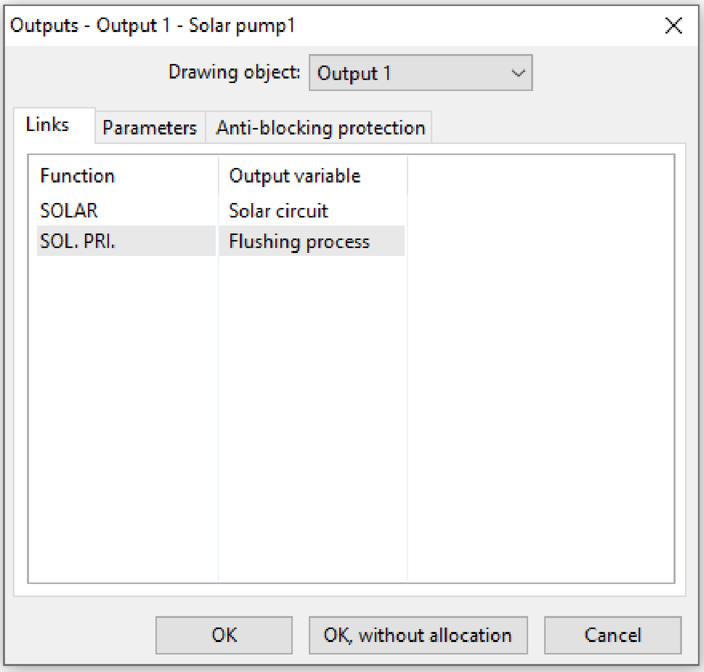
A **double click** on the object takes you to the parameter menu. The drawing object will be initially deemed to be **unused**. After assigning an output number, the standard parameters are offered for selection.

Example: Output 1, Solar pump 1



OK saves the settings of all outputs and the drawing object is assigned to the selected output.

OK, without allocation saves the settings of all outputs.



The **Links** comply with the **Output status** in the controller.

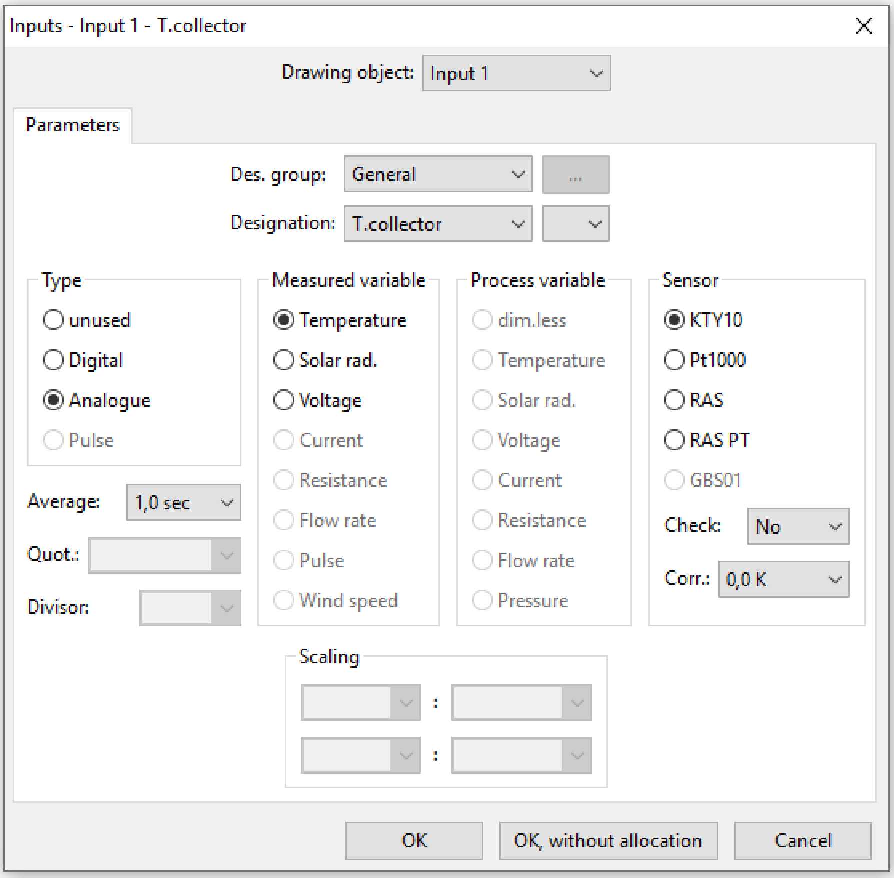
Here, all output links are displayed with their functions.

Likewise, the above also applies to output 14 (data link), analogue outputs 15 and 16, as well as the mixer output pairs 3/4, 8/9, 10/11 and 12/13.

Inputs

As with all drawing objects, a **double click** takes you to the parameter menu.

Example: Input 1 collector sensor



Sensor status

Setting parameters following a **double click**.

Example: Display of the sensor status for sensor input 1

Network outputs

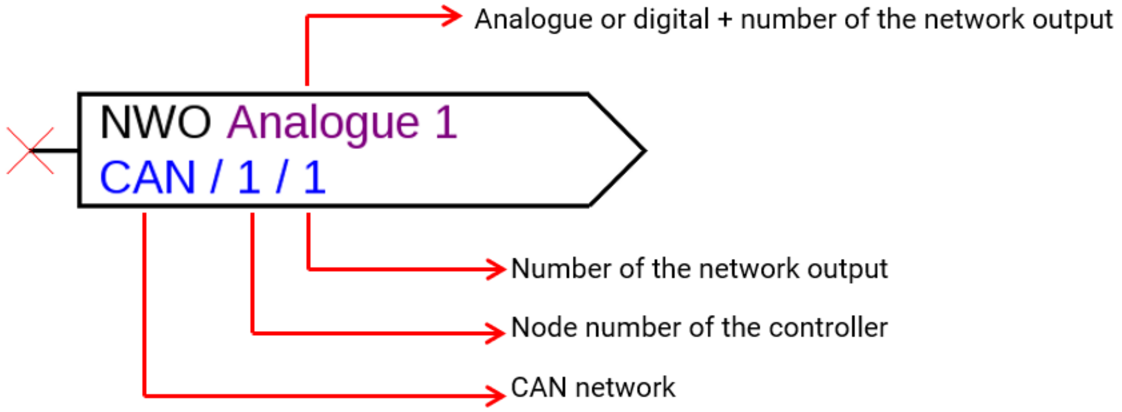
Setting parameters following a **double click**.

Under **Controller**, the network settings of the controller are defined (node number, network enable, auto operation).

The link can be seen under Parameter.

Under the 3rd tab, the **Transmission conditions** are defined.

After setting parameters, the network output is displayed as follows:



Network inputs

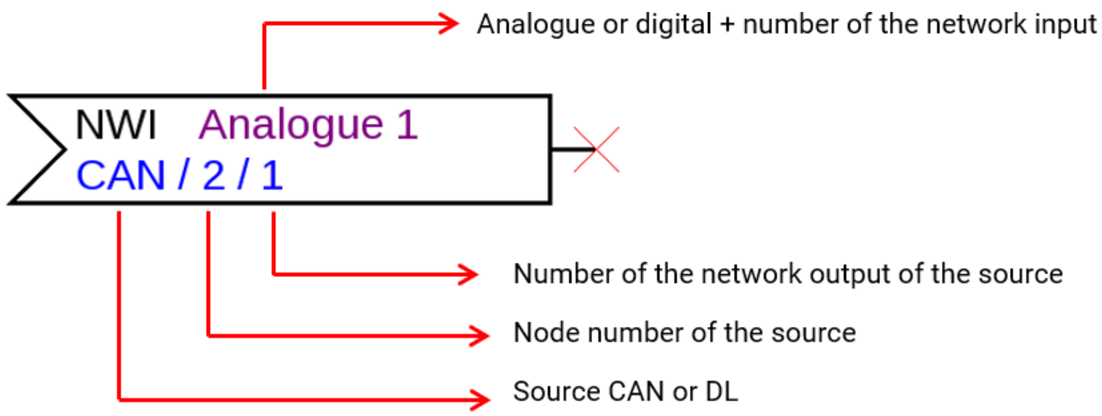
Setting parameters following a double click.

In the tab "**Controller**", the network settings of the controller are defined (node number, network release, auto operating).

In "**Parameter**", the source for the network input is defined.

In the 3rd tab, the "**Timeouts**" are defined.

After parameterisation, the network output is displayed as follows:



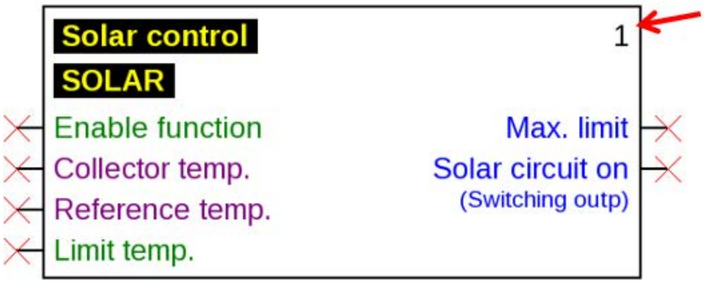
Network status

Example: Network status display for network input analogue 1

Functions

Setting parameters following a double click.

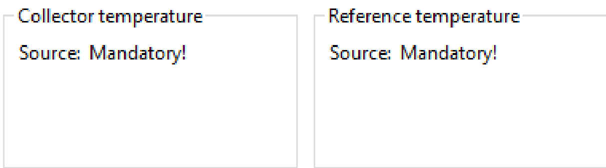
Example: Solar function



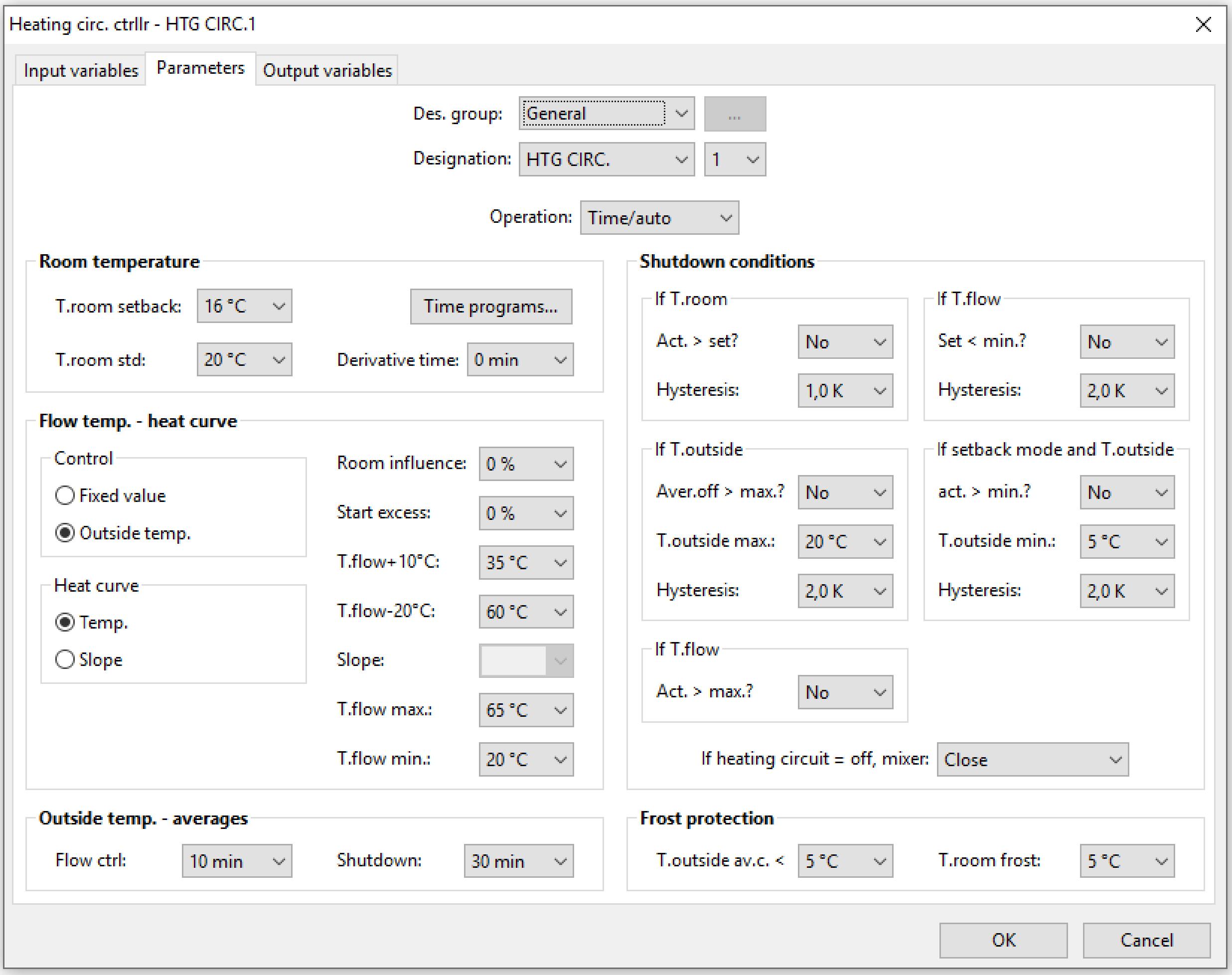
The input variables highlighted in **purple** are **mandatory variables** that must be linked without fail. Setting parameters following a double click on the drawing object is not possible immediately unless these links have been made. If this is attempted anyhow, an error message will appear which will have to be confirmed with OK.

"**Mandatory**!" will appear in the parameters of the respective input variables that were not linked.

The input variables highlighted in **green** can be used but do not have to be.



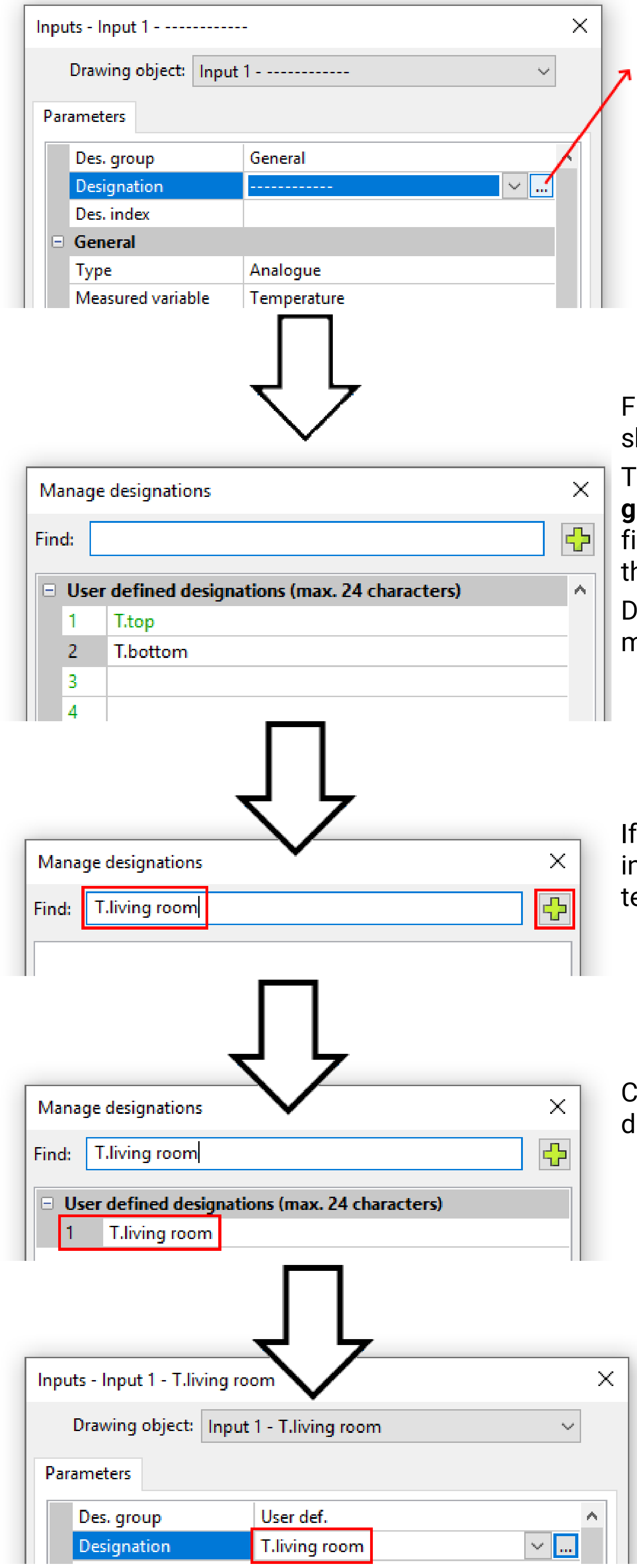
Example: Heating circuit controller



Function data objects for devices with x2 technology

(UVR16x2, RSM610, UVR610, CAN-I/O45, CAN-BC2, CAN-EZ2)

Managing designations, creating user defined designations



Clicking on this button calls up the window for **managing** and selecting all designations.

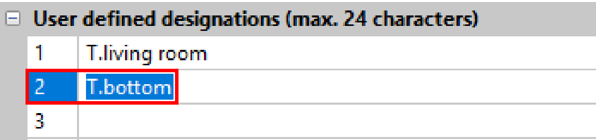
Firstly, the program's default designations are shown.

The designations are divided into different **groups**. A search function makes it easier to find the right one. You only need to enter part of the term you are looking for.

Designations that are not used in the programming are shown in green.

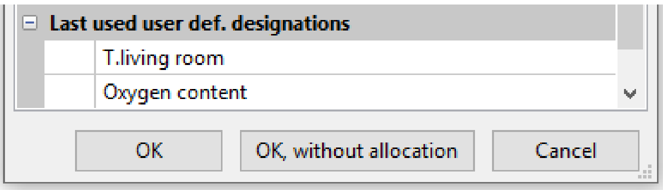
If the required designation is not found, clicking on the **plus icon** immediately inserts the term as a user defined designation.

Clicking on "**OK**" applies this newly defined designation for the object.



A new designation can also be entered directly in the list of user defined designations.

Clicking on "**OK**" allocates the designation to the object, whereas clicking on "**OK, without allocation**" only saves the new designation in the list without applying the designation to the object.



All **recently** used user defined designations (including those from earlier programs) are listed at the bottom of the window and can be selected directly or using the search function.

For direct selection, click on the designation (becomes highlighted) and then "OK".

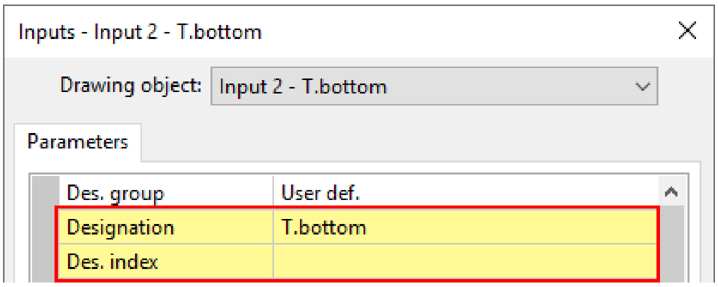
As soon as a designation from the list of recently used designations is allocated to an object, it is also shown in the list of user defined designations in the current program.

Up to 100 designations can be defined (**250** for UVR16x2, UVR610, CAN-EZ3 and CAN-MTx2) with a maximum of 24 characters, which can be allocated to **all** function data objects as required.

Previously defined designations can be edited (changed) directly in the list of user defined designations. The modified designation appears in **addition** to the original designation in the list of **recently** used designations.

Entries in the list of recently used designations can be deleted with the "**Delete**" key. The program's default designations **cannot** be edited or deleted.

Double designations



If a designation that has already been assigned is selected for on object, the areas "Designation" and "Des. index" will be shaded in **yellow**.

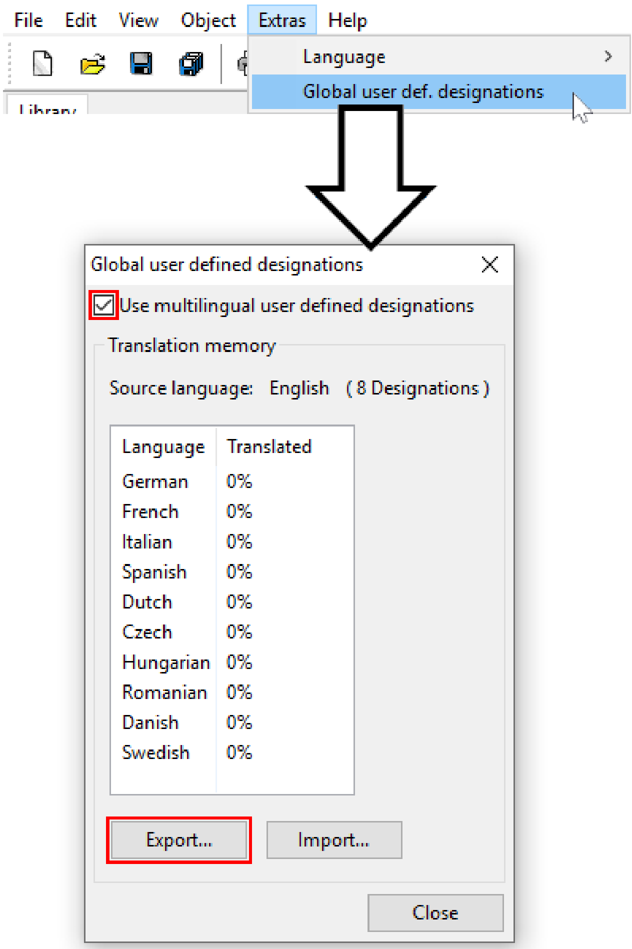
Global user defined designations (multilingual)

Using the "**global user defined designations**", it is possible to create translations of these designations and apply them in the required language.

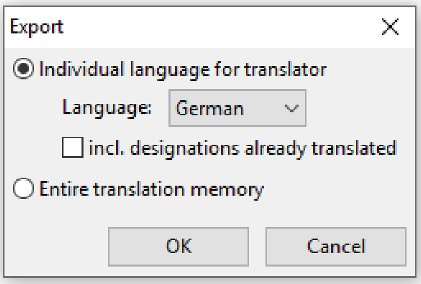
These designations include the "**recently used user defined designations**".

For this purpose, a **translation memory** is created, which is saved on the user's PC irrespective of the relevant program, and which can be called up by TAPPS2.

The example below explains how to create a **translation memory** in the available program languages.



Eight designations are currently saved. After ticking "**Use multilingual user defined designations**", click on "**Export**" to create a csv file for the translator.



Here, the **language** for the csv file is selected along with whether previously translated designations should be included in the csv file as well.

If the **entire** translation memory (all languages with all existing translations) is exported to the csv file, the translation memory can be imported into TAPPS2 on **other** computers.

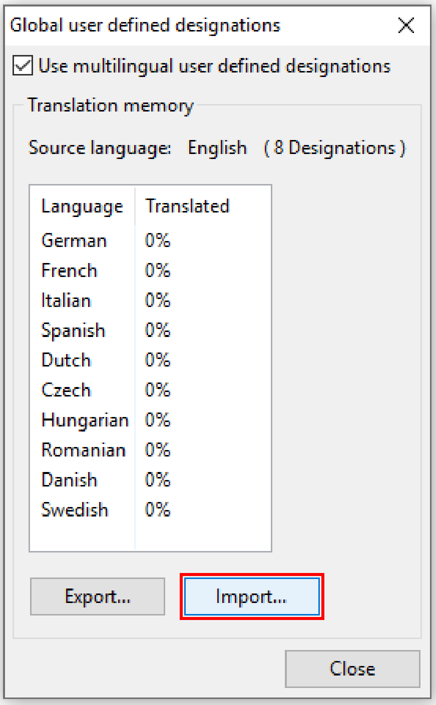
Click on "**OK**" and then specify the folder and file name for the csv file.

Example of a csv file after export and translation:

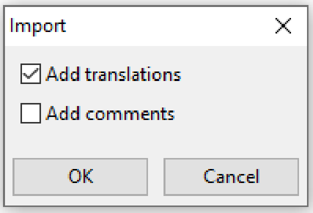
	A	B	C	D
1	en	Comments	Max. length	de
2	T.bottom		24	T.unten
3	T.centre		24	T.Mitte
4	T.top		24	T.oben
5				

The programmer can enter explanatory comments on the terms for the translator in the csv file.

The translator puts the translated designations in the relevant language column. In this example, the csv file was created for German (column "de" = German).



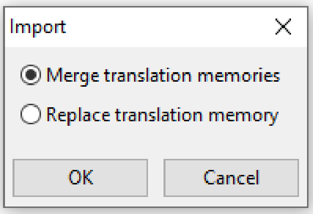
After translation, this table can be reimported into TAPPS2.



Tick these boxes as required to insert the translation and/or the comments.

If comments have been included once, in future they will automatically be included (even in other languages) when exporting to the csv file.

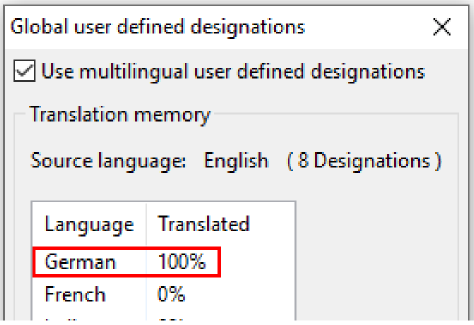
Press "**OK**" to finish.



When exporting an "**entire translation memory**", you have to decide whether to **combine** the file with the existing translations in the translation memory, or whether to completely **replace** the translation memory.

Press "**OK**" to finish.

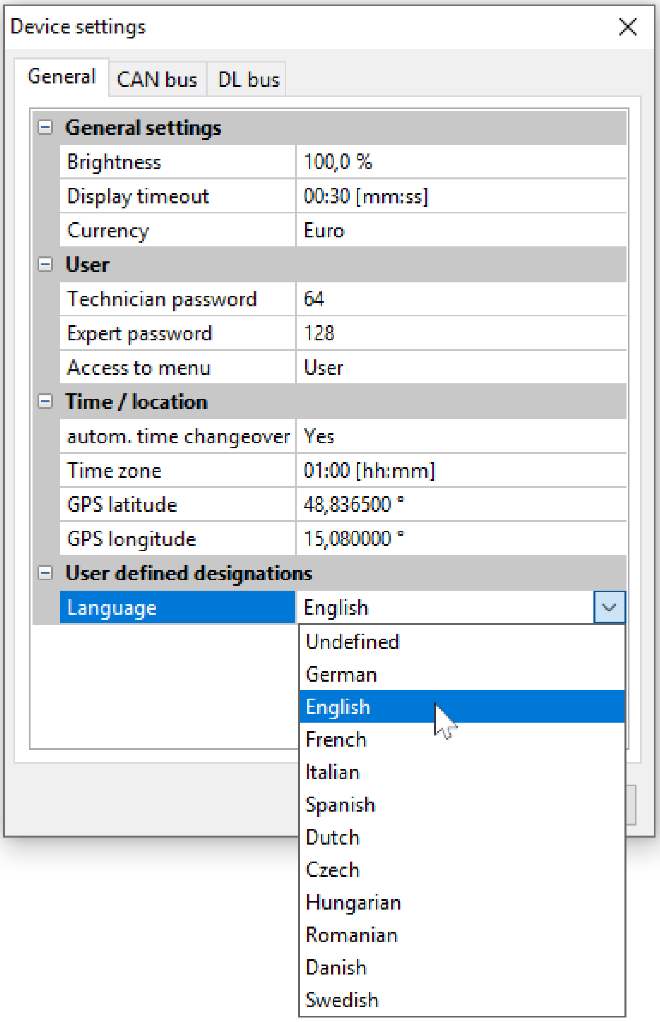
In the "User defined designations" menu, you can see whether all the designations in the translation memory are translated (= 100 %).



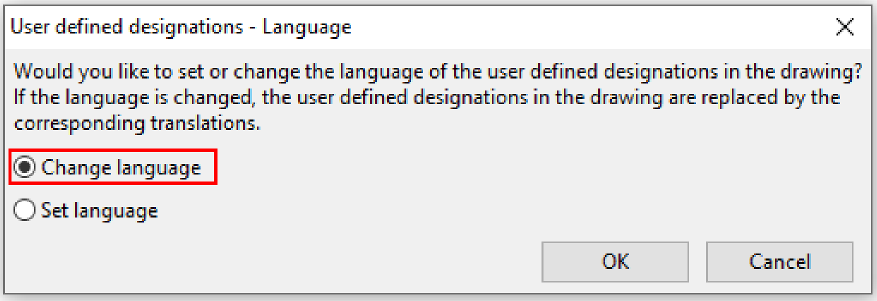
Applying the translated designations

Example: In a program that has been created in **English**, the user defined designations also need to be shown in **German** on the x2 device for an **German-speaking** user.

Requirement: All user defined designations within the **program** must be translated.

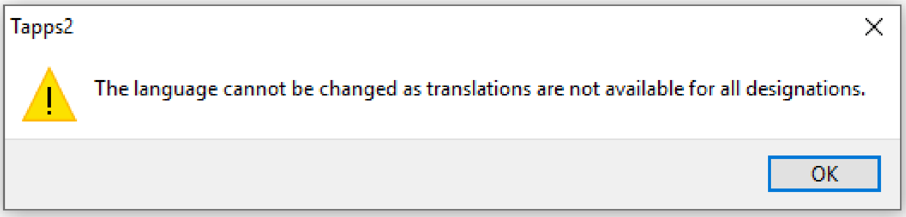


The original language was **English**. Before the change, **English** user defined designations are therefore shown. The language for the designations needs to be **changed** to **German**.

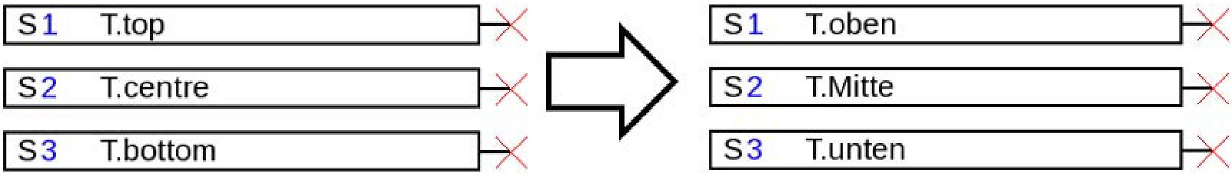


The language has to be **changed** for this application scenario.

If not all designations in the list of "**User defined designations**" are translated, the language cannot be changed and the following message appears:



Once the language has been changed from English to German, designations are shown in German.

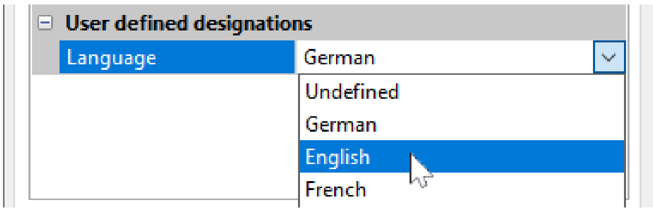


A **dat**-file has to be generated for the x2 device for every language so that the right user defined designations can be shown on the device.

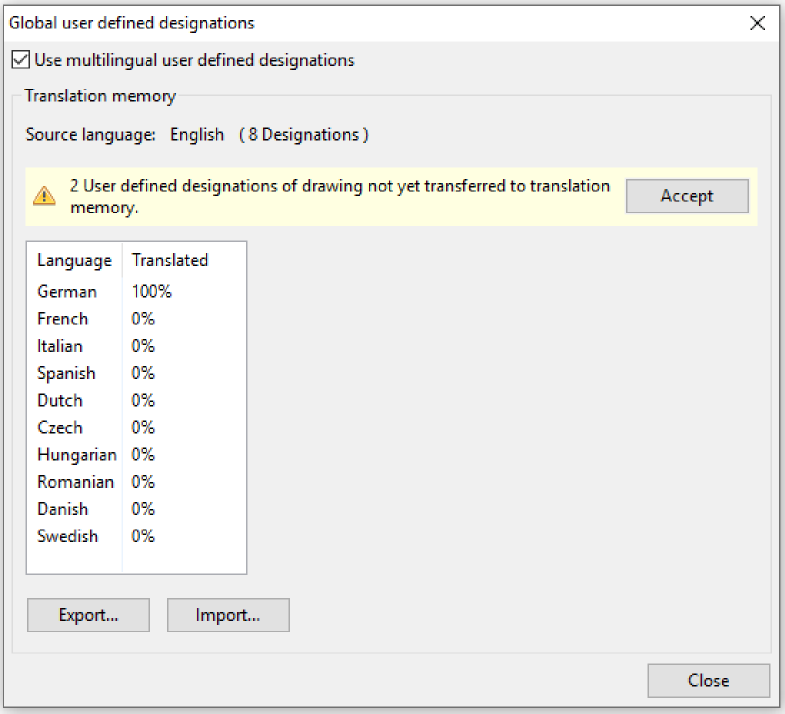
Creation of translations for non-defined languages

Procedure if the language of the user defined names has not yet been defined:

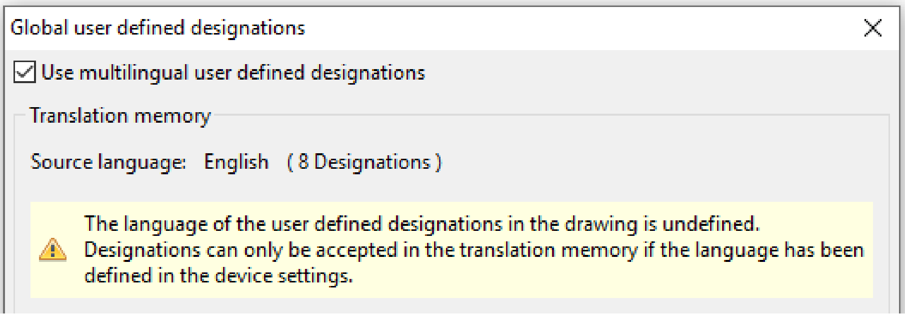
1. Open the program with TAPPS2 **version ≥1.11**.
2. Set the language to **English** for the user defined designations in the menu File/Settings/Device settings.



3. Add the designations to the translation memory (menu "Extras/Global user defined designations").



If the language has not yet been defined in the device settings (language "**undefined**"), the following message appears:

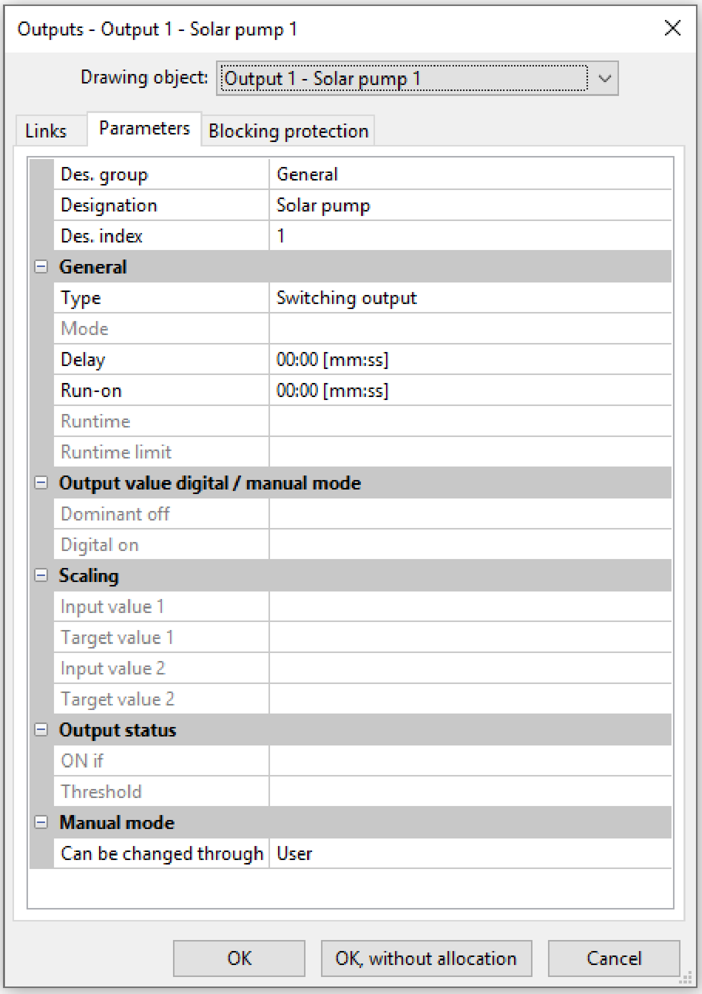


4. Click "**Export**" to create a csv file for the translator.
5. After translation, **import** the csv file.
6. In future, the "old" user defined designations can now also be used in other programs (see previous chapter "Applying the translated designations").

Outputs

A **double click** on the object takes you to the parameter menu. The drawing object will be initially deemed to be **unused**. After assigning an output number, parameters are displayed for selection.

Example: Output 1, Solar pump



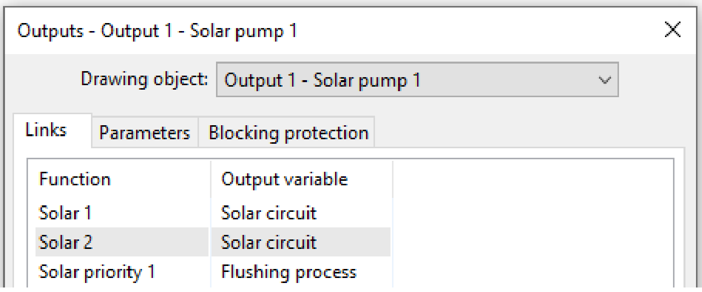
Nach Auswahl der Ausgangsnummer muss der Typ festgelegt werden.

Danach wird die Bezeichnung ausgewählt und werden alle weiteren Einstellungen vorgenommen.

OK saves the settings of all outputs and the drawing object is assigned to the selected output.

OK, without allocation saves the settings of all outputs.

Links



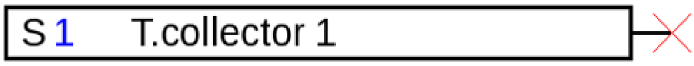
Here, all connected links of the output are displayed with their functions.

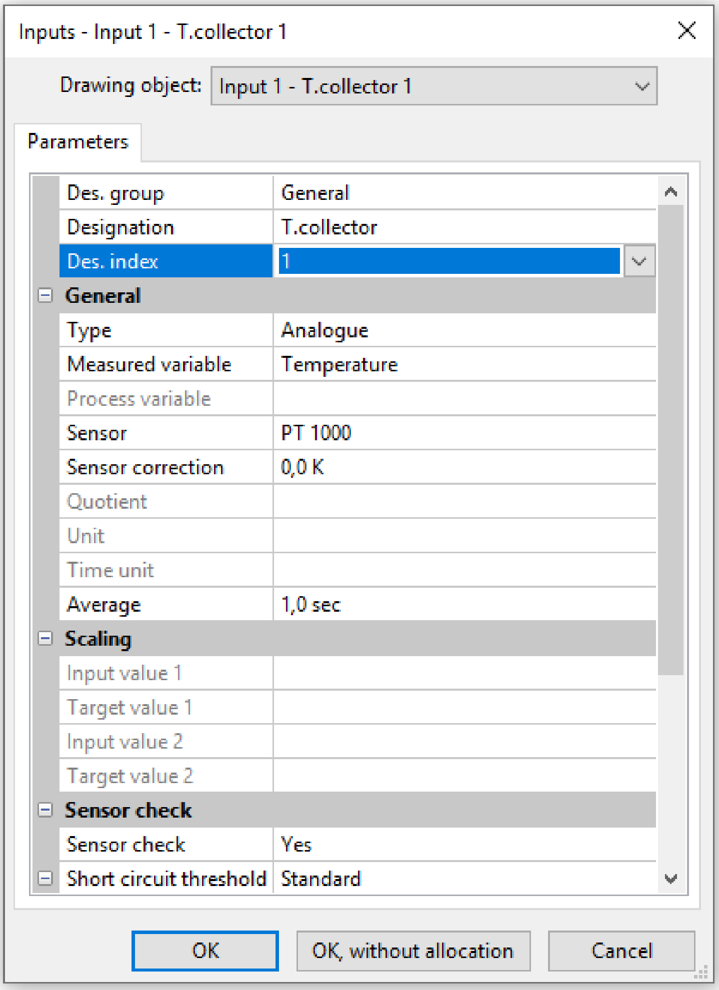
Blocking protection

A time for all outputs that are to receive blocking protection (see controller manuals) can be entered here.

Inputs

Setting parameters following a double click.
Example: Input 1 Sensor collector 1





After selecting the input number, type and variable must be defined.
The designation is then selected and all additional settings are made.

OK saves the settings of all inputs and the drawing object is assigned to the selected input.

Save the settings of all inputs with **OK, without allocation.**

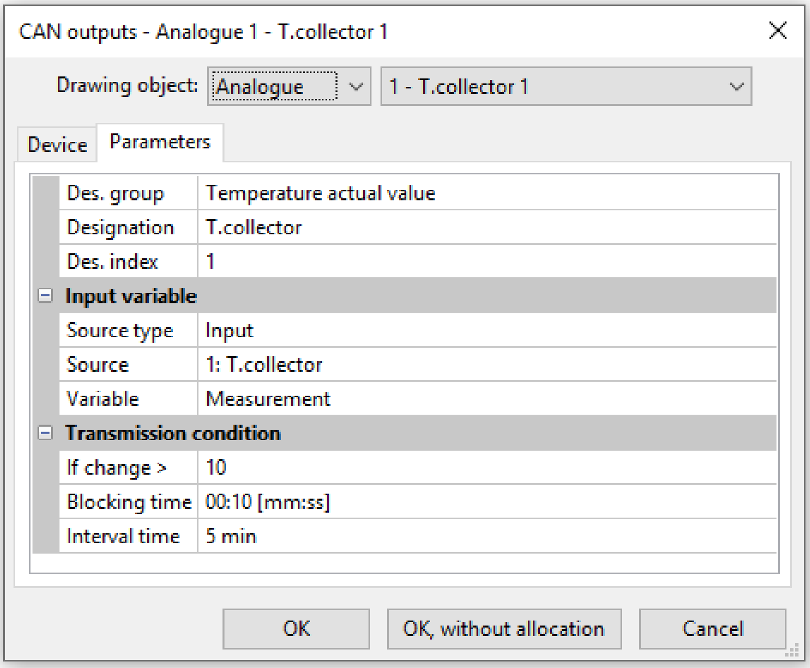
CAN outputs

Setting parameters following a double click

Under the **Controller** tab, the CAN network settings of the controller are defined (node number, BUS rate, designation).

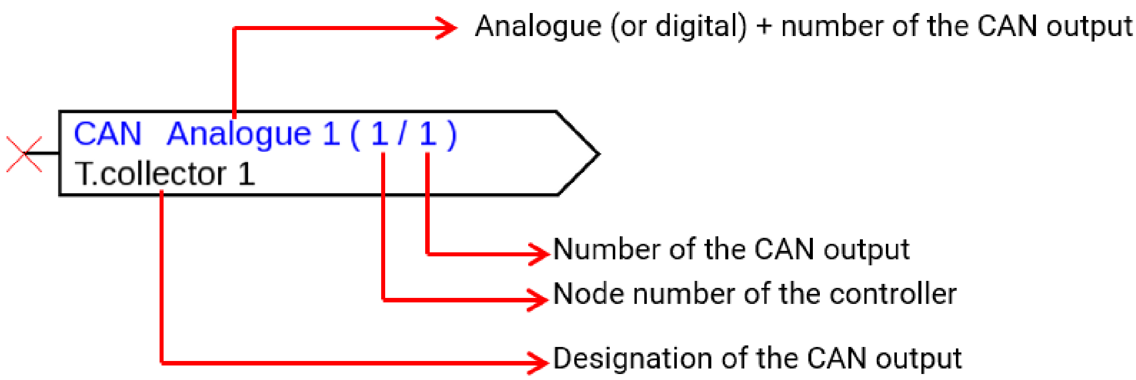
The link can be seen under **Parameter**. The designation of the CAN output and the transmission condition are defined here.

Example: Linking of analogue CAN output analogue 1 with the actual value of input 1



After selecting the type and the CAN output number, the designation is selected and all additional settings are made.

After setting parameters, the CAN output is displayed as follows:



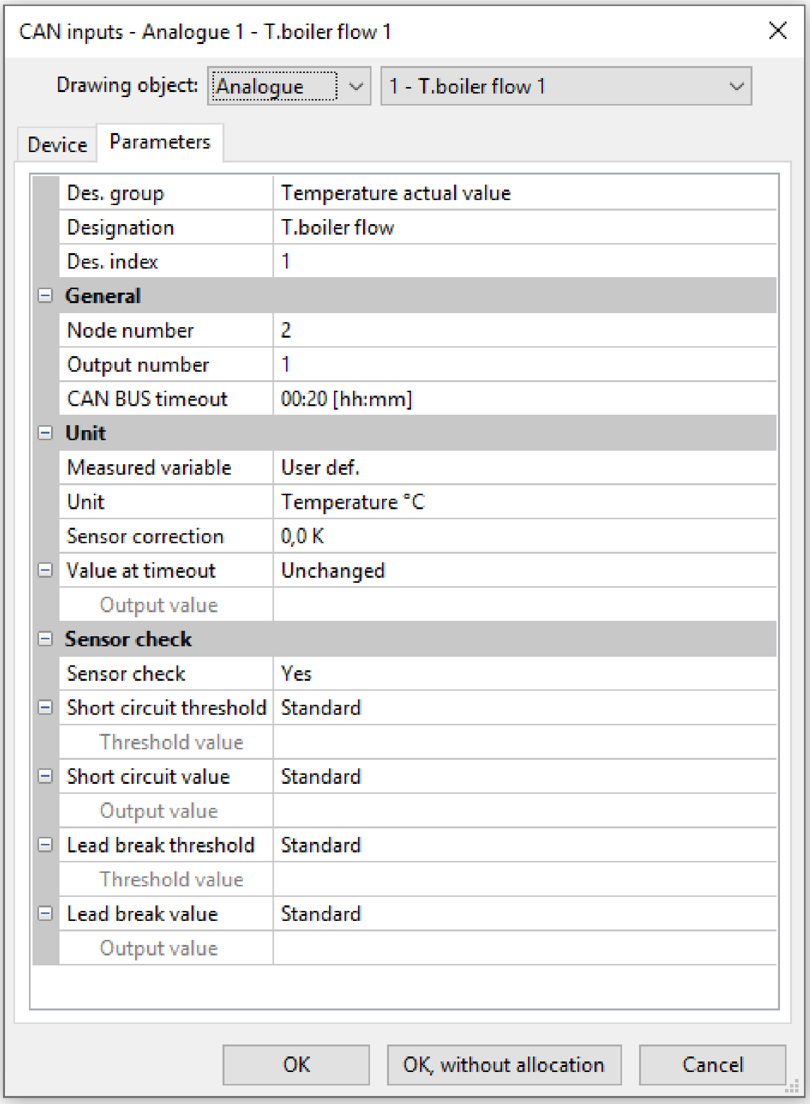
CAN inputs

Setting parameters following a double click

Under the **Controller** tab, the CAN network settings of the controller are defined (node number, BUS rate, designation).

In Parameter, the source and the time-out for the CAN input are defined.

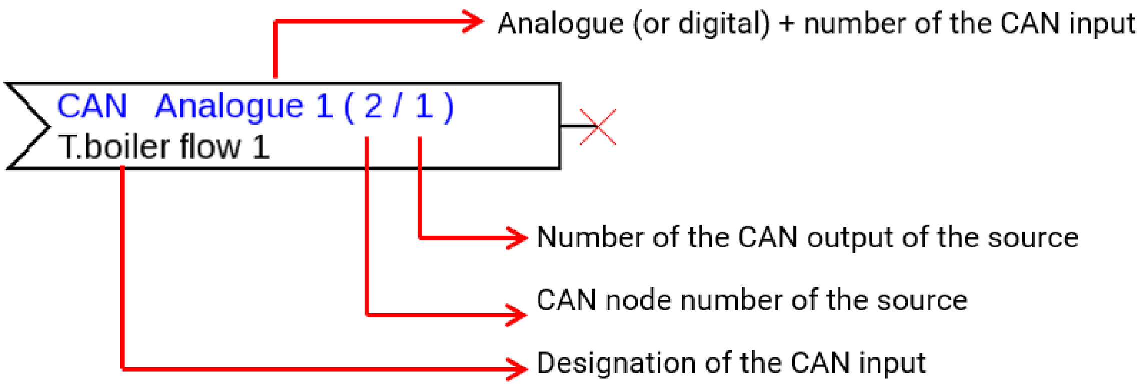
Example: Analogue CAN input analogue 1 of CAN Bus device with node number 2 and its CAN output 1



After selecting the type and the CAN input number, the designation is selected and all additional settings are made.

With entry of the User def. variable **User def.**, the unit, a sensor correction and user-defined monitoring of the sensor value can be defined.

After setting parameters, the CAN input is displayed as follows:



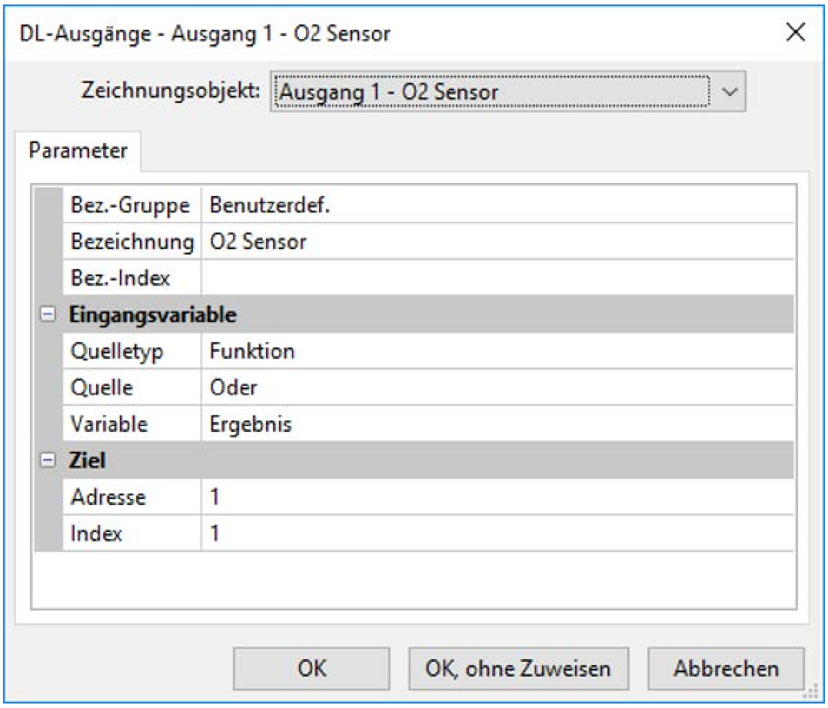
DL outputs

Setting parameters following a double click

Analogue as well as digital values can be transmitted via DL output.

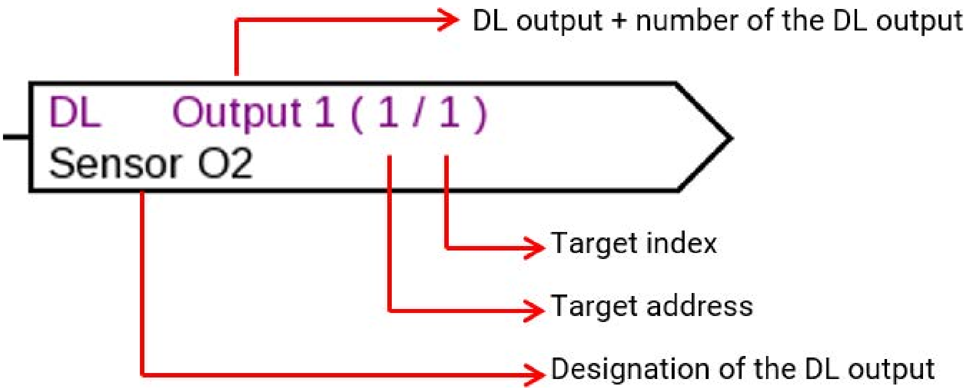
The link can be seen under Parameter. The designation of the DL output is defined here.

Example: Linking the DL output 1 with the result of the OR function for target address 1 index 1



After selecting the DL output number, the designation is selected and all additional settings are made.

After setting parameters, the DL output is displayed as follows:

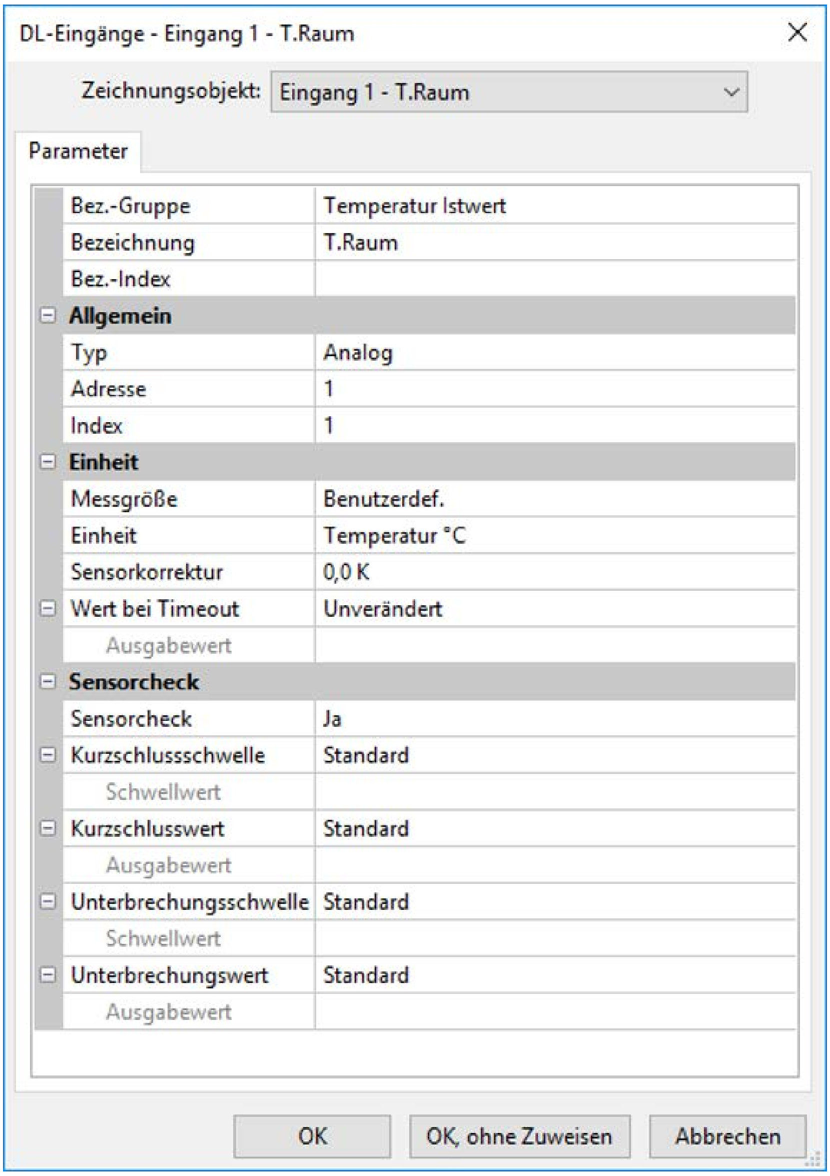


DL inputs

Setting parameters following a double click

In Parameter, the type and the source of the DL input are defined.

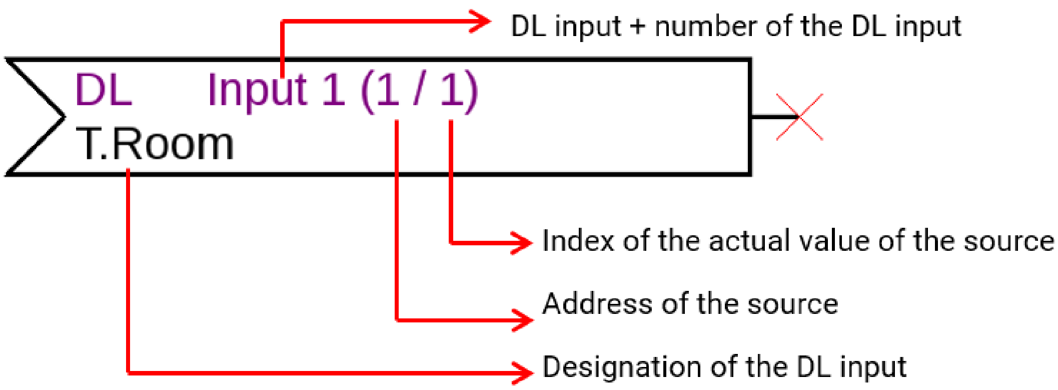
Example: Analogue DL input 1 of DL sensor with address 1 and its index 1



After selecting the DL input number, the designation is selected and all additional settings are made.

With entry of the **User def.** variable, the unit, a sensor correction and user-defined monitoring of the sensor value can be defined.

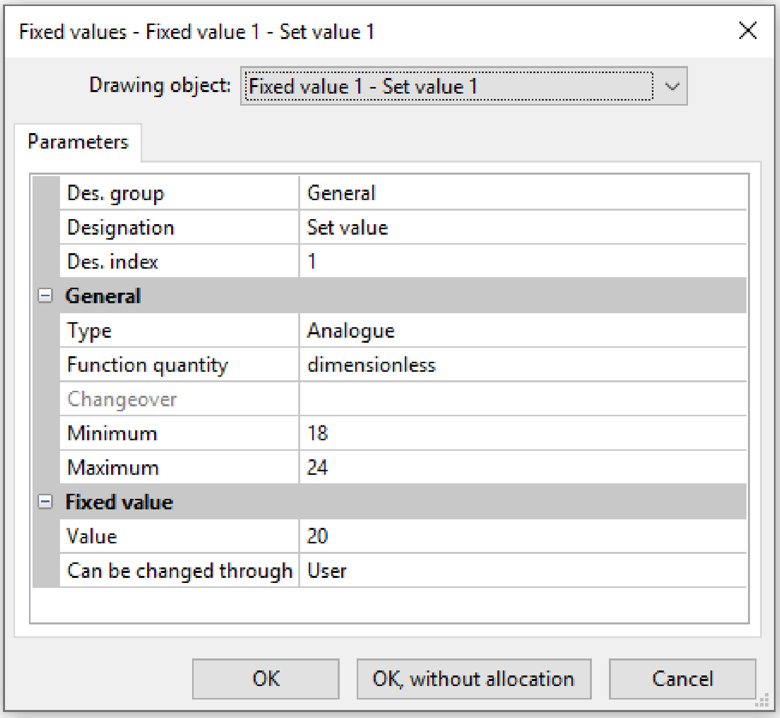
After setting parameters, the DL input is displayed as follows:



Fixed values

Setting parameters following a **double click**

Example: Fixed value 1 with designation "Nominal temperature 1", with setting limits

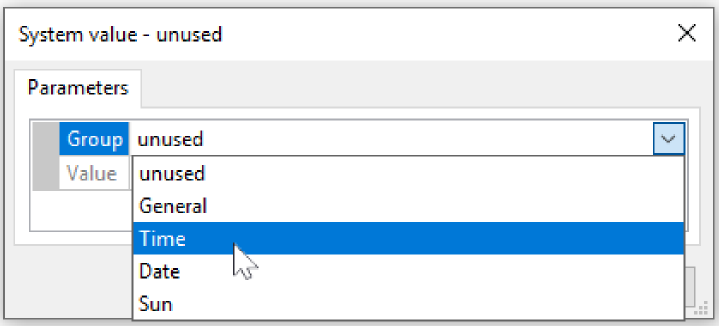


After selecting the fixed value number, type and function size must be defined. Then the designation can be entered and all additional settings made.

System values

Setting parameters following a double click

Example: System value time / hour

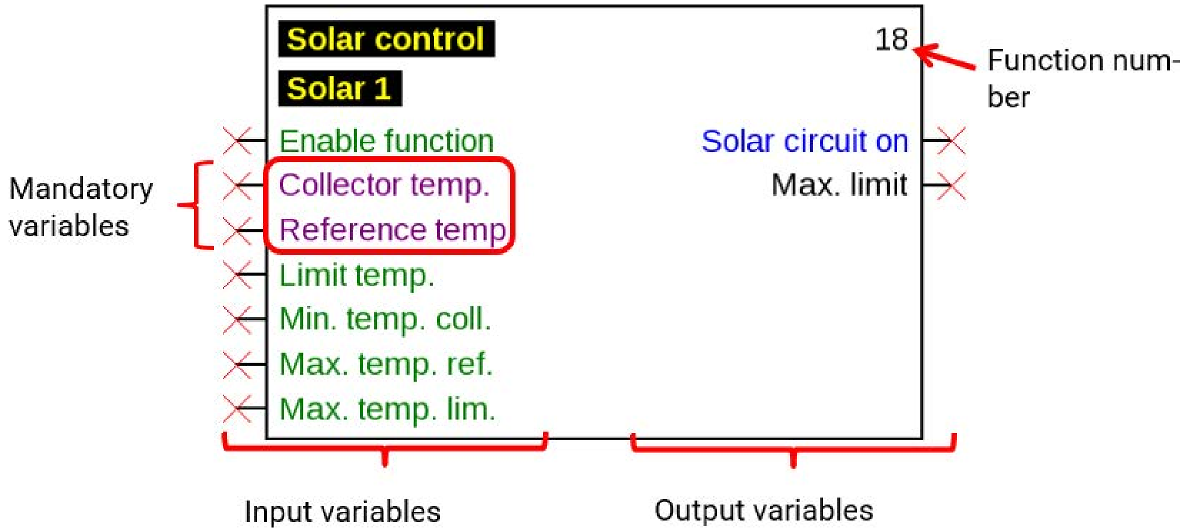


The required value is defined after selecting the group.

Functions

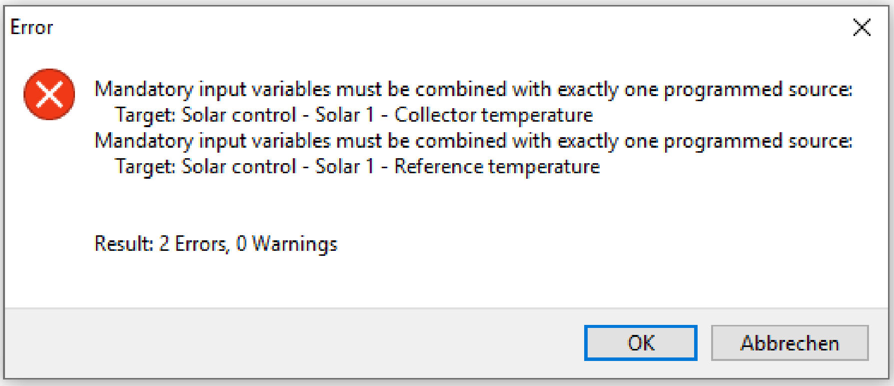
Setting parameters following a **double click**

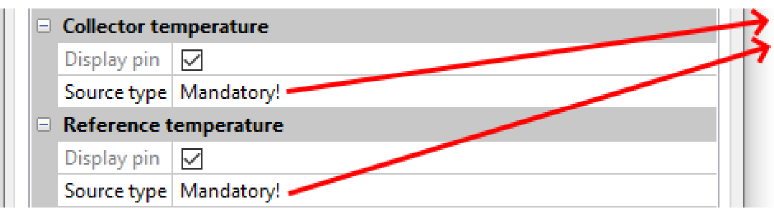
Example: Solar function



The input variables highlighted in **purple** are **mandatory variables** that must be linked without fail. Setting parameters following a double click on the drawing object is not possible immediately unless these links have been linked. If this is attempted anyhow, an error message will first appear which can be confirmed with **OK**.

Example: Solar function

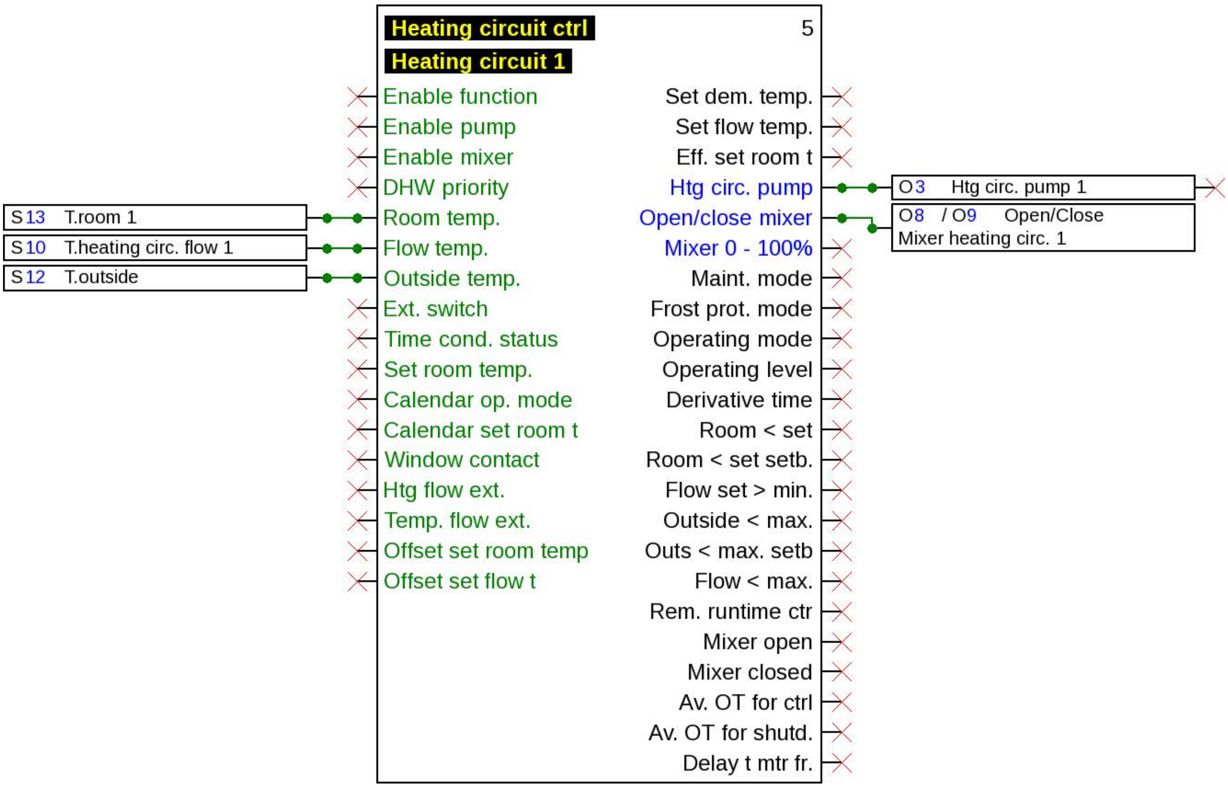




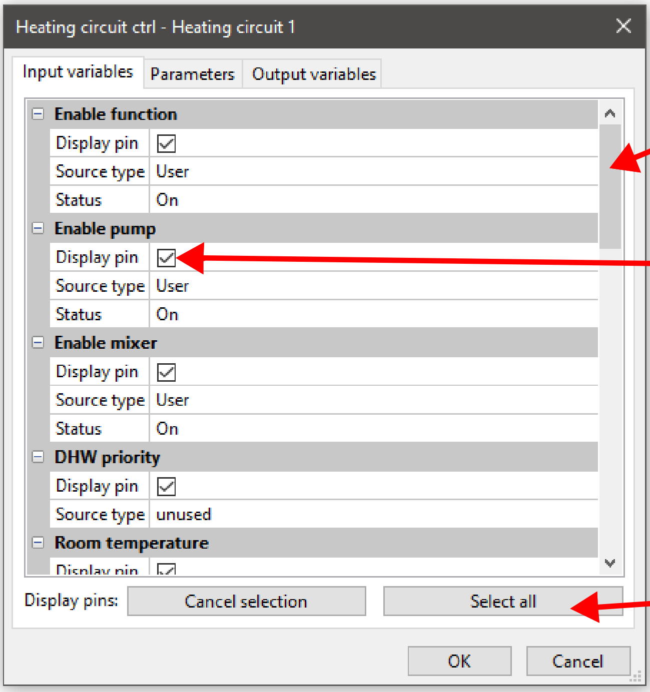
"**Mandatory**!" will appear in the parameters of the respective input variables that were not linked.

The input variables highlighted in **green** can be used but do not have to be.

Example: Heating circuit controller with all input and output variables



Display / hide input and output variables



The invisible input and output variables can be displayed by scrolling or moving the **scroll bar**.

If the check mark at **Display pin** is removed, these input or output variables will no longer be displayed in the drawing area.

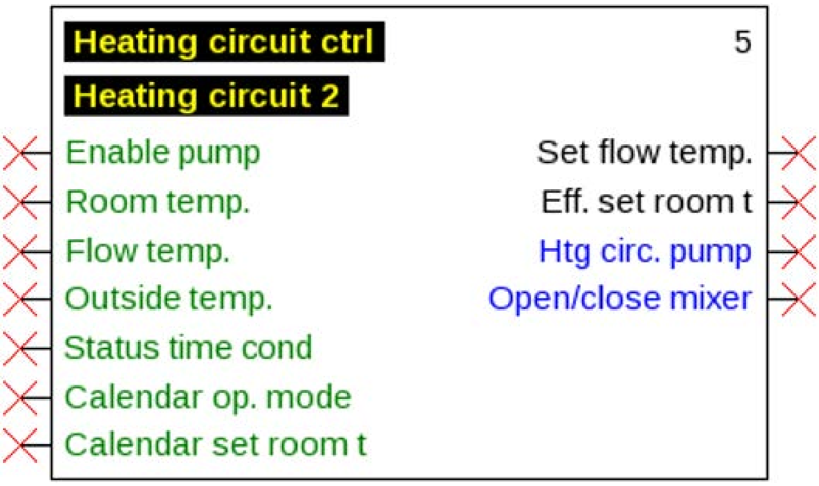
It makes the view of numerous functions clearer if these variables are not used.

The check mark cannot be removed in the case of mandatory variables (highlighted in purple) or linked variables.

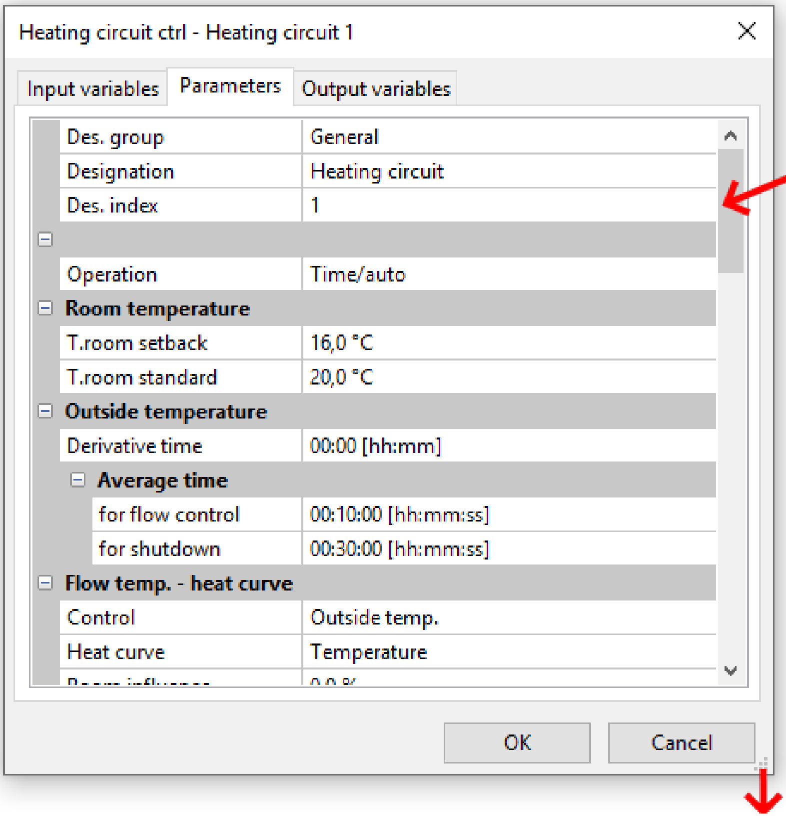
With these buttons, all the pins can be hidden ("Cancel selection") or displayed ("Select all"). The pins of mandatory variables or those that are already connected are excluded from these actions.

A selection for the input and output variables displayed **immediately** was made at the factory to make the display of functions clearer. These hidden variables can be re-displayed at any time with **Display pin**.

Example: Unused input and output variables were hidden.



Setting the parameters

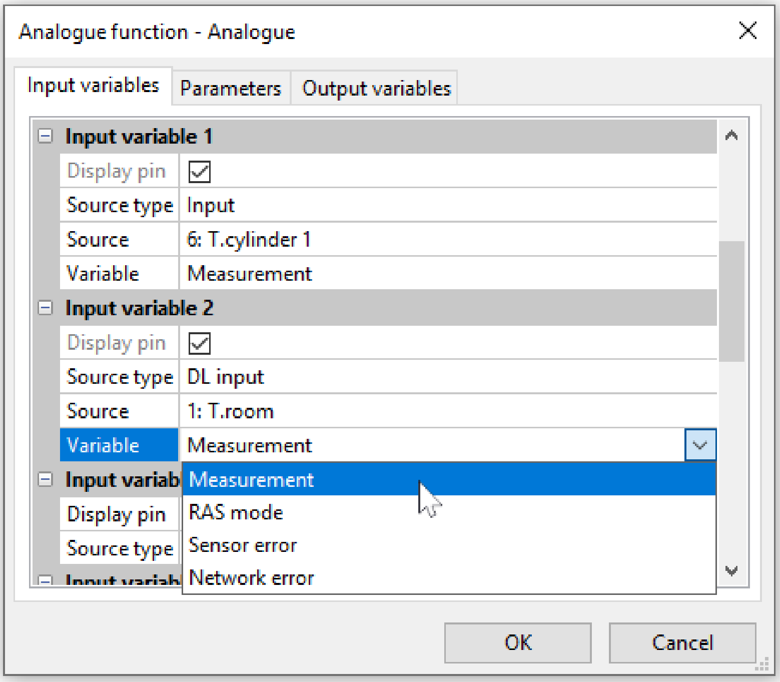


The hidden parameters can be displayed by scrolling or moving the **scroll bar**.

Expanding the window

After linking an input, output, DL input or CAN input with a function, the information of the variables to be transmitted to the function can be defined in the input variables of the function.

Example: Analogue function, DL input analogue



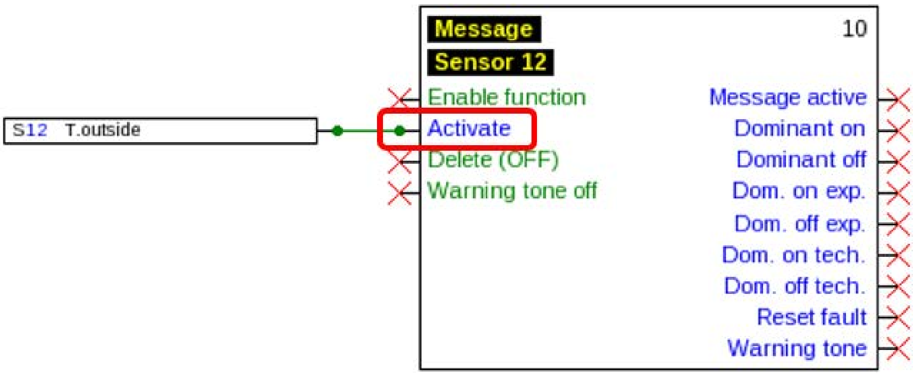
- **Measurement** – the value captured by the sensor
- **RAS mode** – the following analogue values are issue depending on the switch position on the room sensor (RAS):

Automatic	0
Normal	1
Setback	2
Standby	3

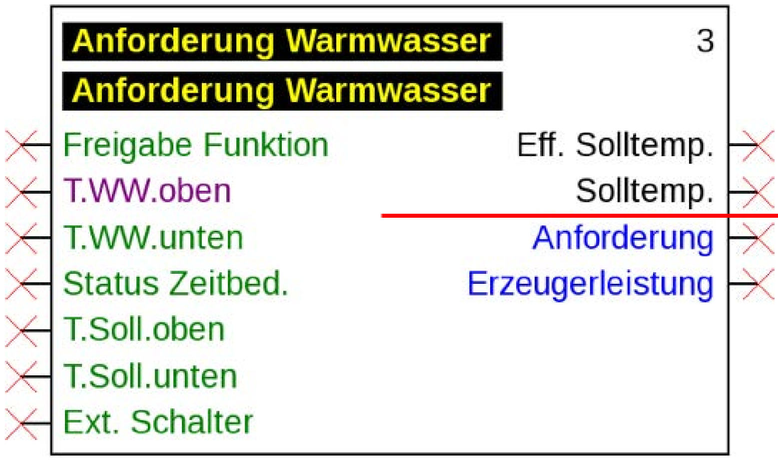
- **Sensor error** – digital value, ON with sensor errors
- **Network error** – digital value, ON there has been a time-out (= error)

Input variables deviating from the factory settings will be displayed in **blue**.

Example: The **Sensor error** variable of the sensor was selected.



Output variables

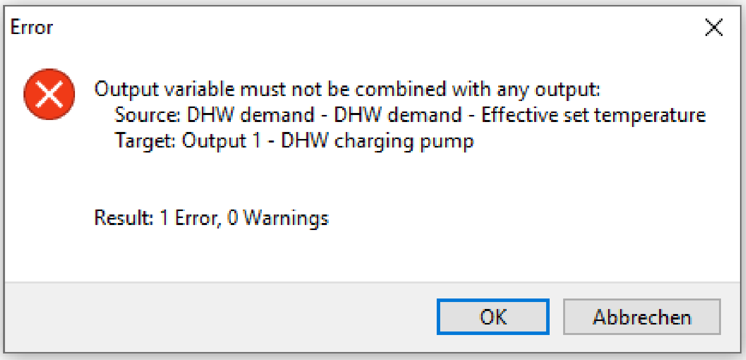


The output variables highlighted in **black** can be linked **only** with input variables of other functions or CAN and DL outputs.

The output variables highlighted in **blue** can be linked with outputs. But links to input variables of other functions or CAN and DL outputs are also permitted.

An error message is displayed if a forbidden link is made.

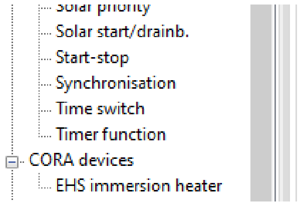
Example:



CORA devices

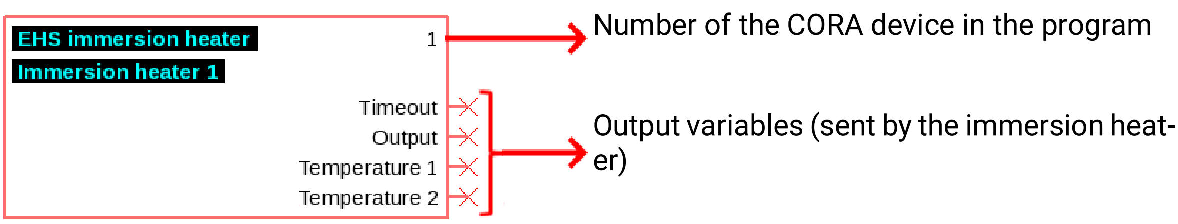
Shown only when programming CORA devices (e.g. CAN-EZ3)

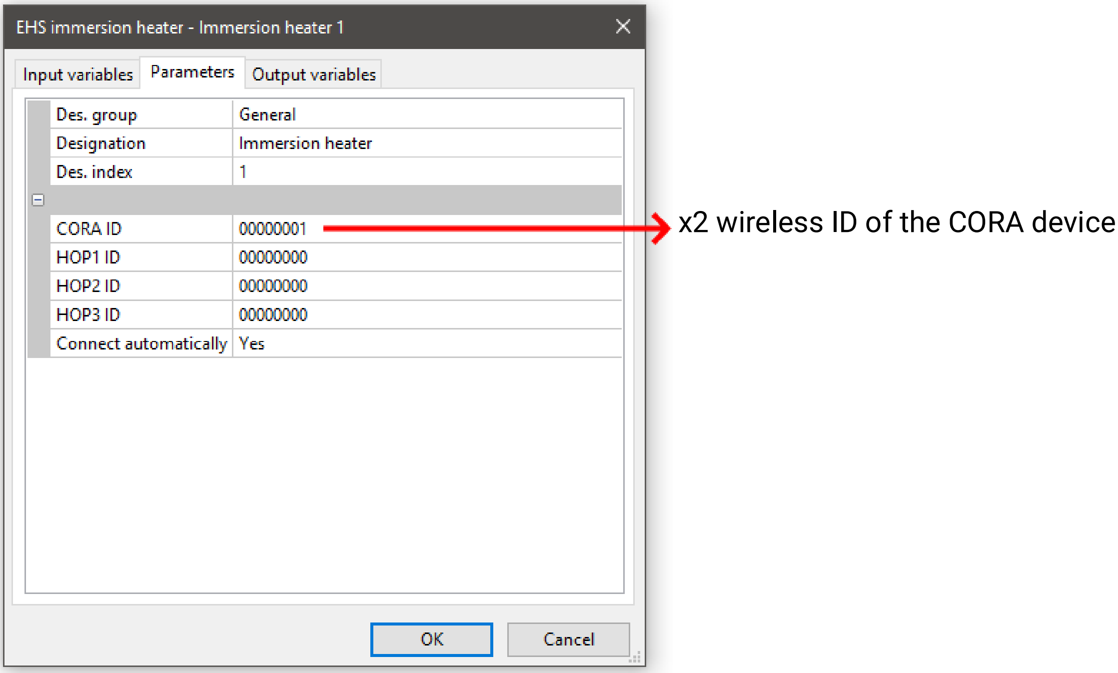
The "CORA devices" item is located at the end of the selection tree.



Example: EHS immersion heater

Programming after **double clicking.**





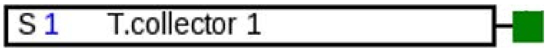
The drawing objects for CORA devices are also designed for input variables (= values sent to the CORA device), but there is no use for them as yet.

More detailed information on CORA devices and how they work, as well as general information about the wireless system, can be found in the instructions for the respective devices.

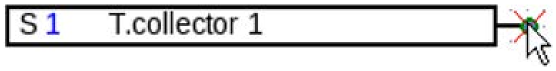
Links

Direct links between 2 objects

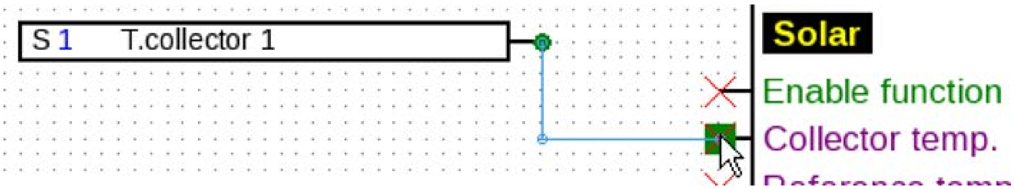
1. If you hold the cursor over a link, it will turn into a green square and the cursor turns into a pencil.



2. A mouse-click changes the shape to a green circle.

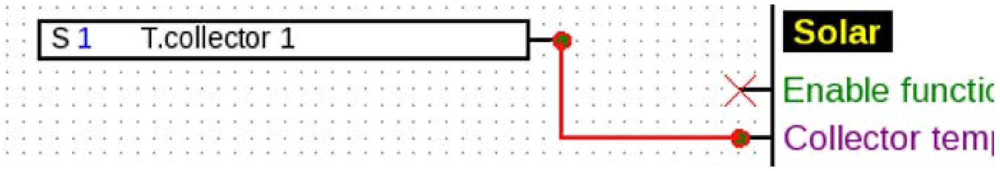


3. Now drag the cursor to the required target point to generate a line.



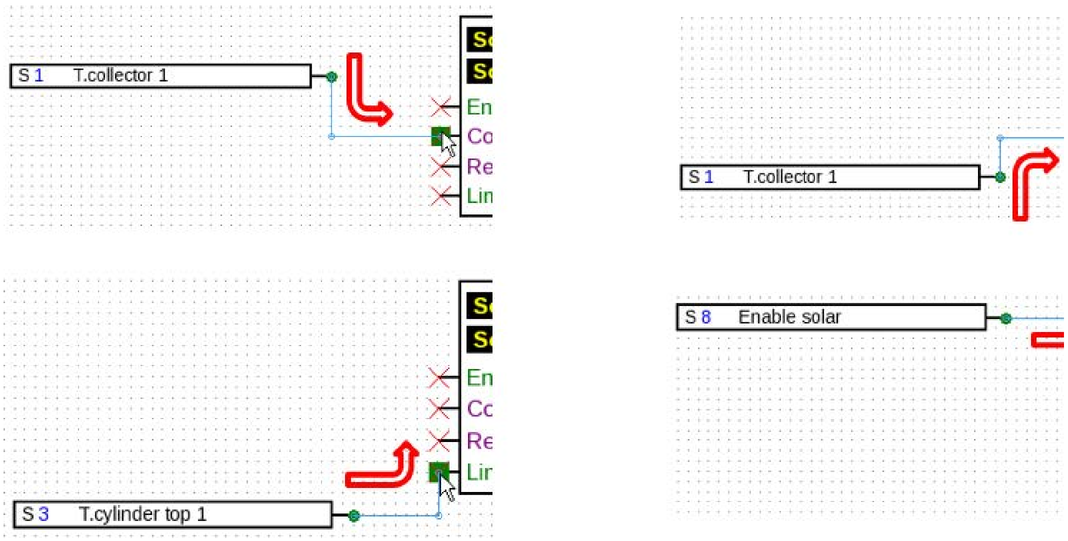
If the target point is not on the same level, the line is adjusted at right angles.

4. A click on the target point fixes the line and thus the link in place.



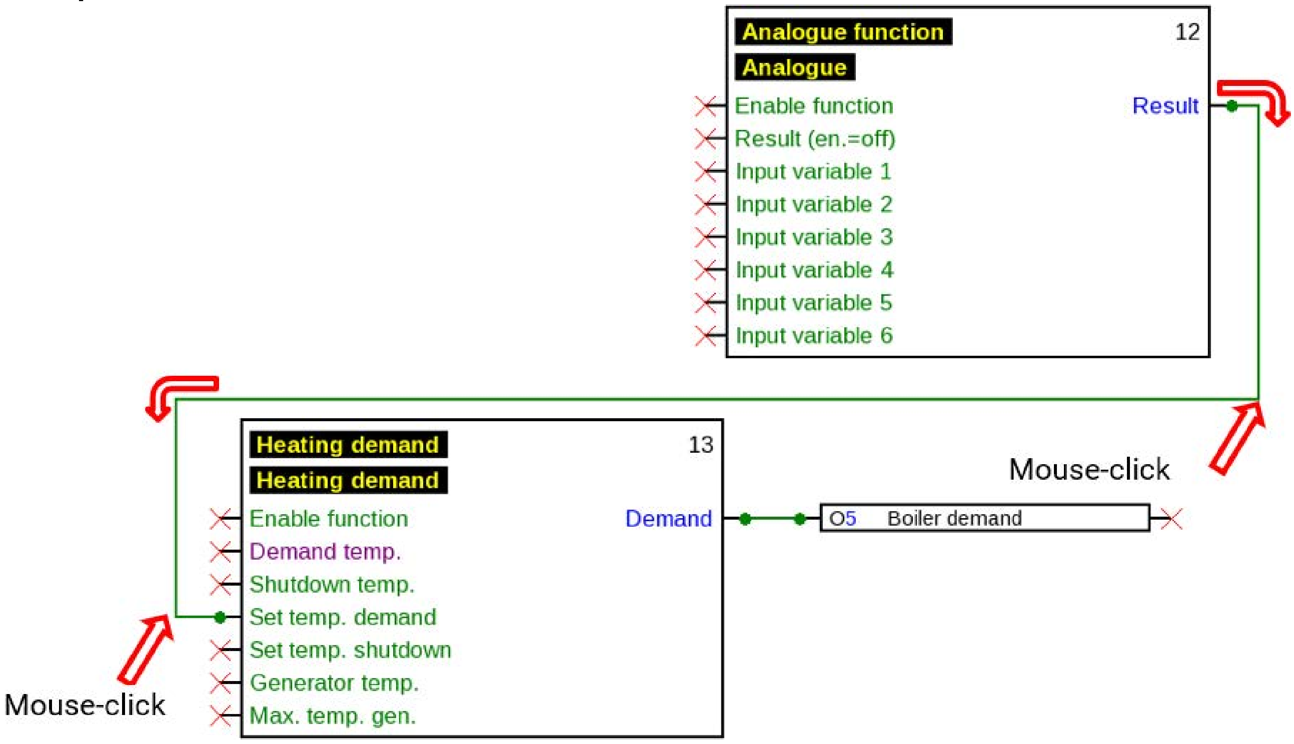
The green, circular **link points** show that a link exists.

The direction in which the cursor is dragged from the starting point determines the course of the link line:



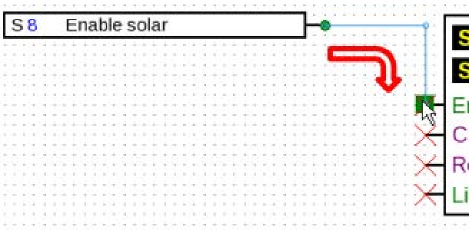
A mouse-click whilst dragging of the line generates a corner point. Lines can thus be taken around other objects and thus do not disturb the view of the object.

Example:

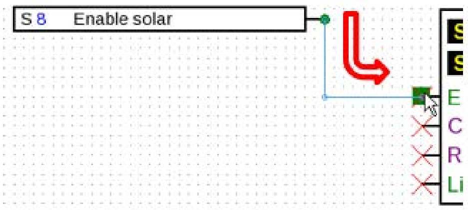


Changing the line shape

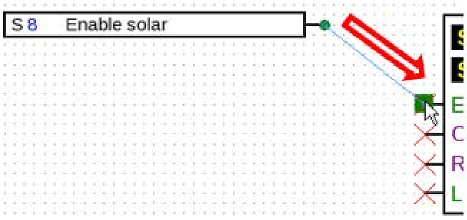
As long as the link is not completed, the line shape can be changed by pressing the **tab key**:



Original line (the line was dragged away from the linking point horizontally)



Line after the **pressing** the tab key once

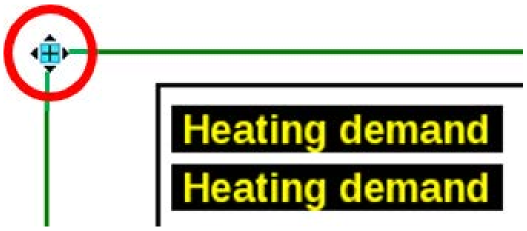


Direct, slanted line after **pressing** the tab key twice

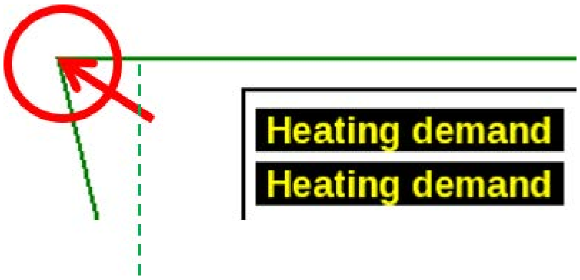
Editing lines

Moving corner points

1. Place the cursor over the required corner point which changes its shape.

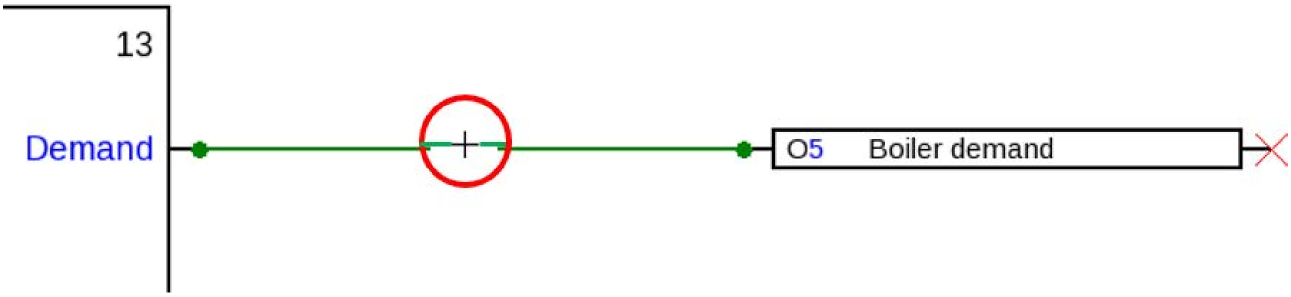


2. With the mouse button held down, the corner point can now be moved.

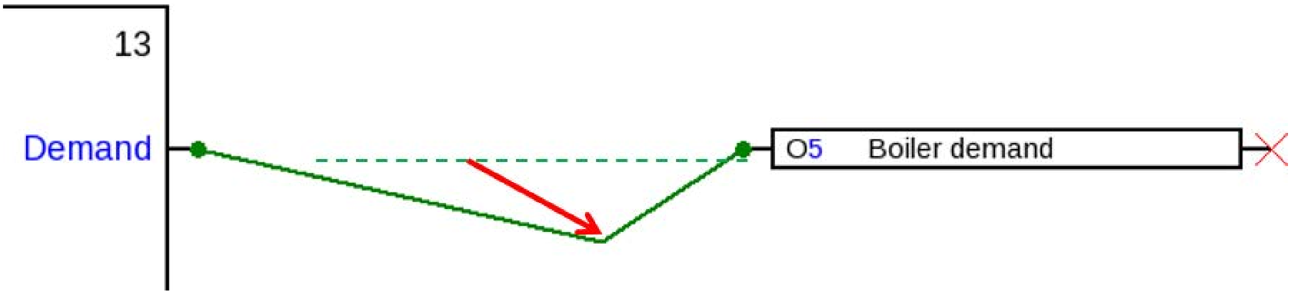


Changing a line

If you place the cursor directly over a point on the line, its shape will turn into a "+" sign.

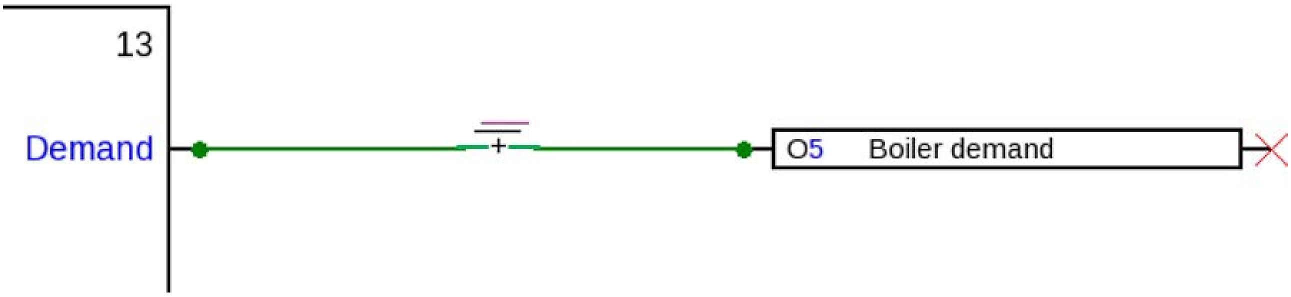


With the left mouse button held down, the line can now be dragged to this point.

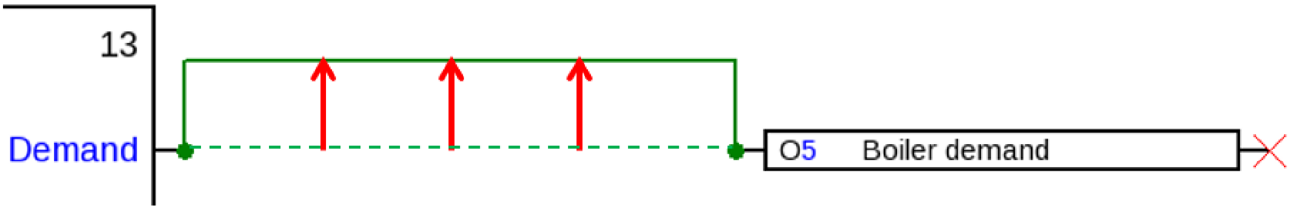


Moving a line

The shape of the cursor changes if you place the cursor over a line whilst holding down **Alt**.

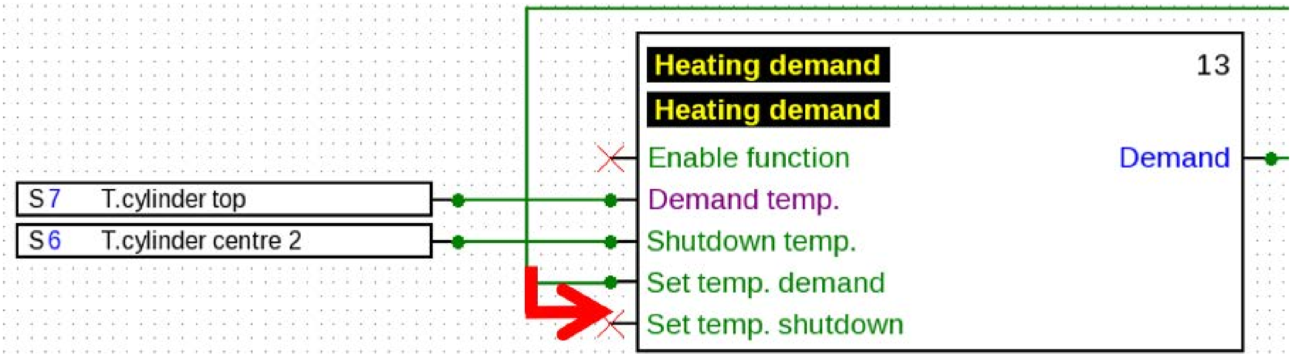


With the left-hand mouse button held down, the line can now be dragged in parallel.



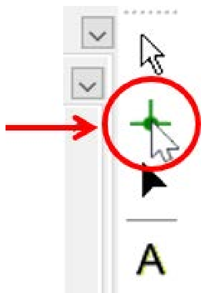
Branches

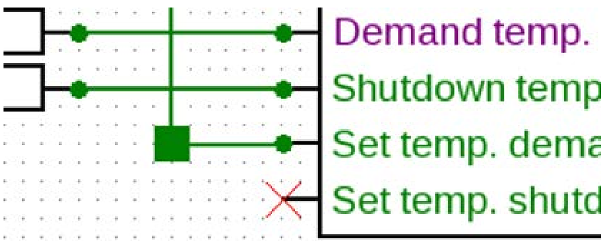
Example: Heating demand; the set value demand is to be linked with the set temperature shutdown by means of a branch.



The branch can be generated **in two ways**:

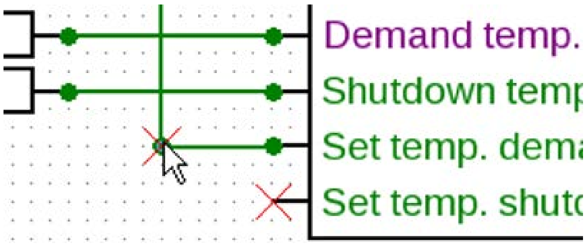
1. Press **Ctrl** on the keyboard and take the cursor to the required node point. The node point is displayed as a green square; the cursor turns into a "pencil".
2. Click on the **Node mode** in the right-hand tool bar.
   The cursor is taken to the required node point. The node point is displayed as a green square; the cursor turns into a "pencil".



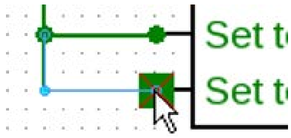


After that, both methods are identical:

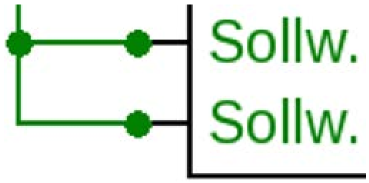
A mouse-click changes the shape to a green circle.



Now drag the cursor to the required target point to generate a line.



A click on the target point fixes the line and thus the link in place.



Deleting objects and lines

1. Select an object, object group or line
2. Delete with the help of **Del** or with the **Edit / Delete** parameter.

Command „Select links“

The commands "Select links" and "Edit / Select links" (shortcut: Ctrl+Shift+F) select all links of the currently selected drawing object. In addition, if signal transfer is selected, all associated signal acceptances are selected and vice versa.

Invalid links

If links are created that are not permitted, an **error message** will be displayed when attempting to set parameters.

Setting parameters can continue if you click on **OK** in spite of the message.

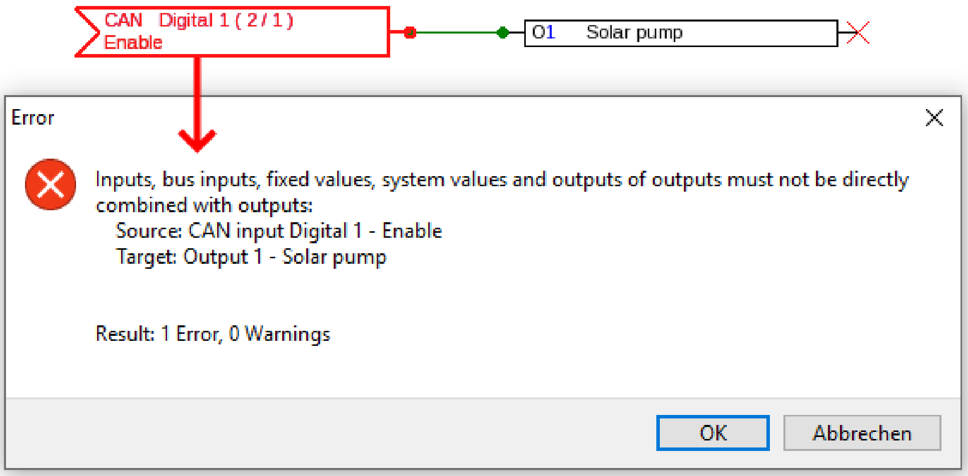
We recommend removing the error though **before** continuing with setting parameters.

Function data for the controller can be generated only after all errors have been removed.

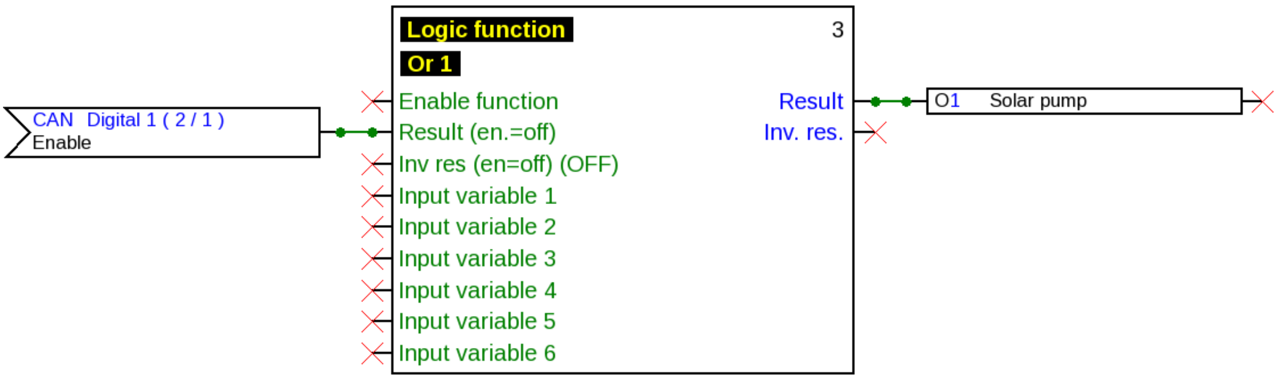
Network input – output

An output cannot be switched directly from a digital network input. This requires the appropriate logic or analogue function.

INCORRECT:



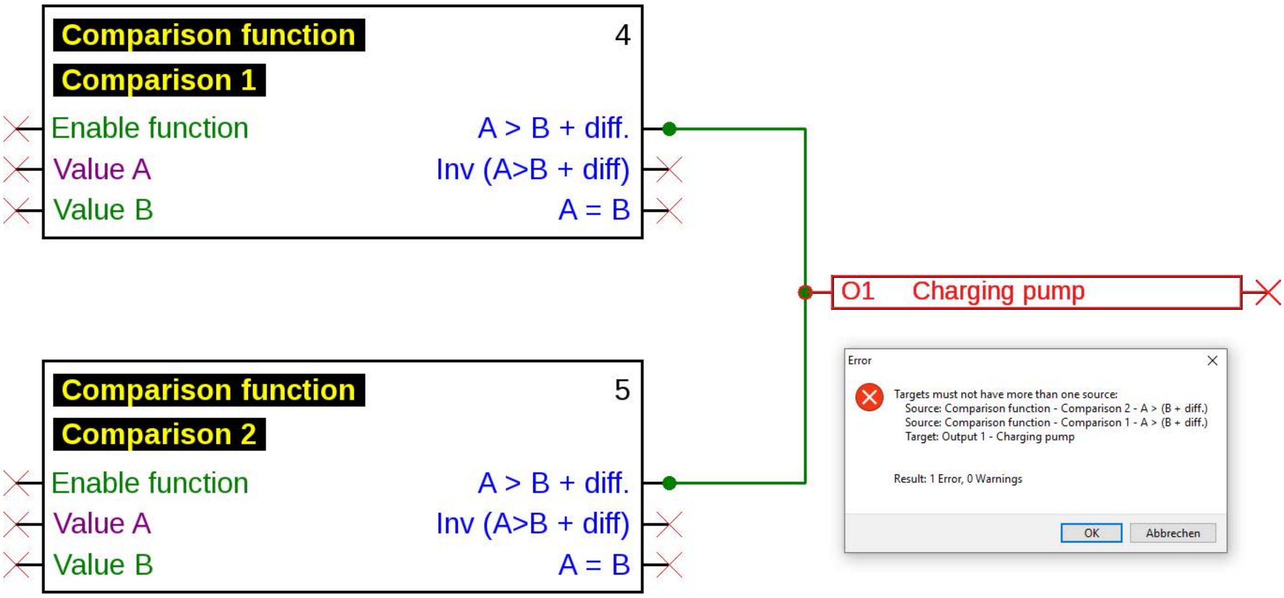
CORRECT:



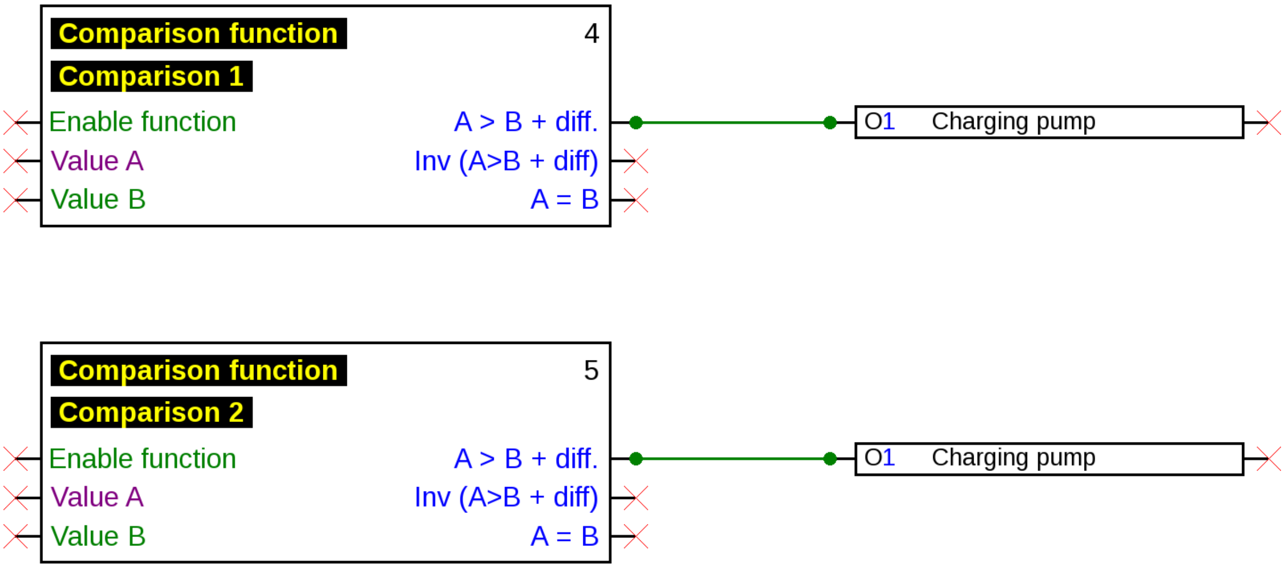
Linking two output variables

Output variables may not be linked.

***INCORRECT*:**



***CORRECT*:**



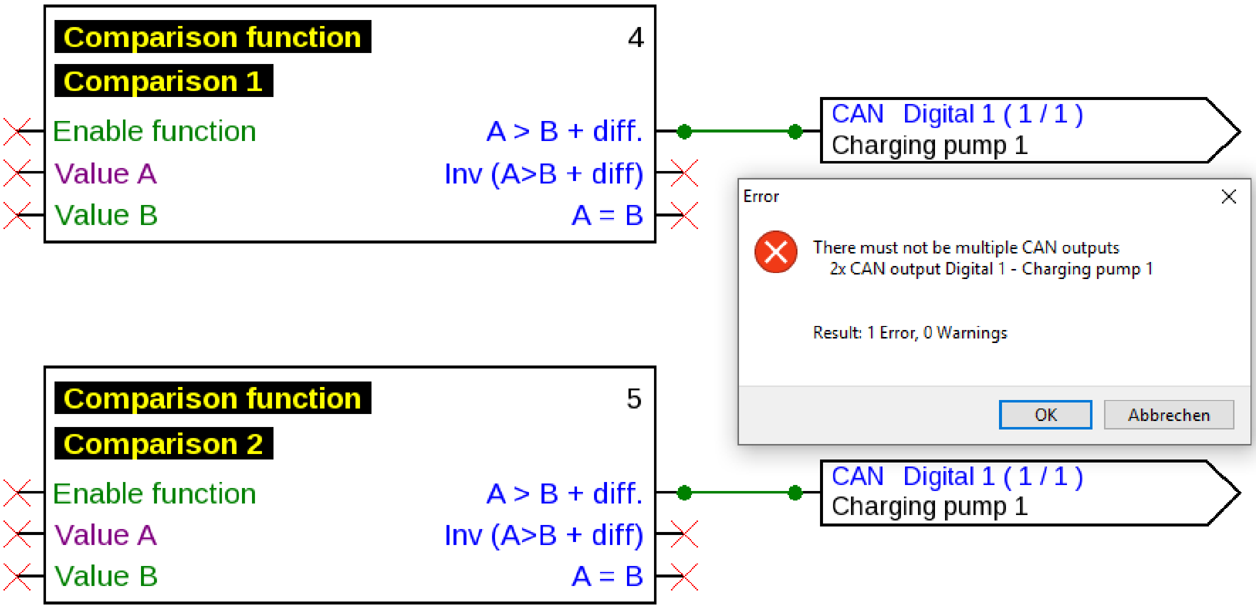
For this, identical outputs are linked with the logical operator OR (if one switches to ON, so do all the rest).

Single network output on multiple functions

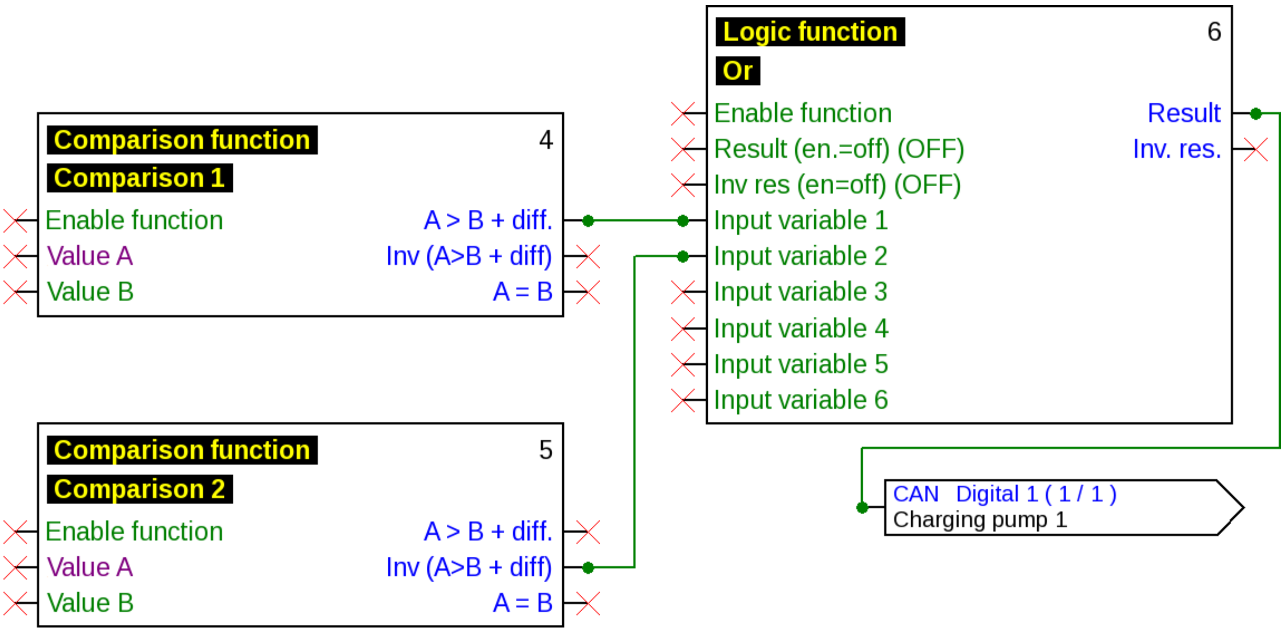
Every network output must appear only **once** in the drawing.

If the value of a network output is formed with multiple functions, then this must be realised accordingly with logic or analogue functions.

INCORRECT:



CORRECT:

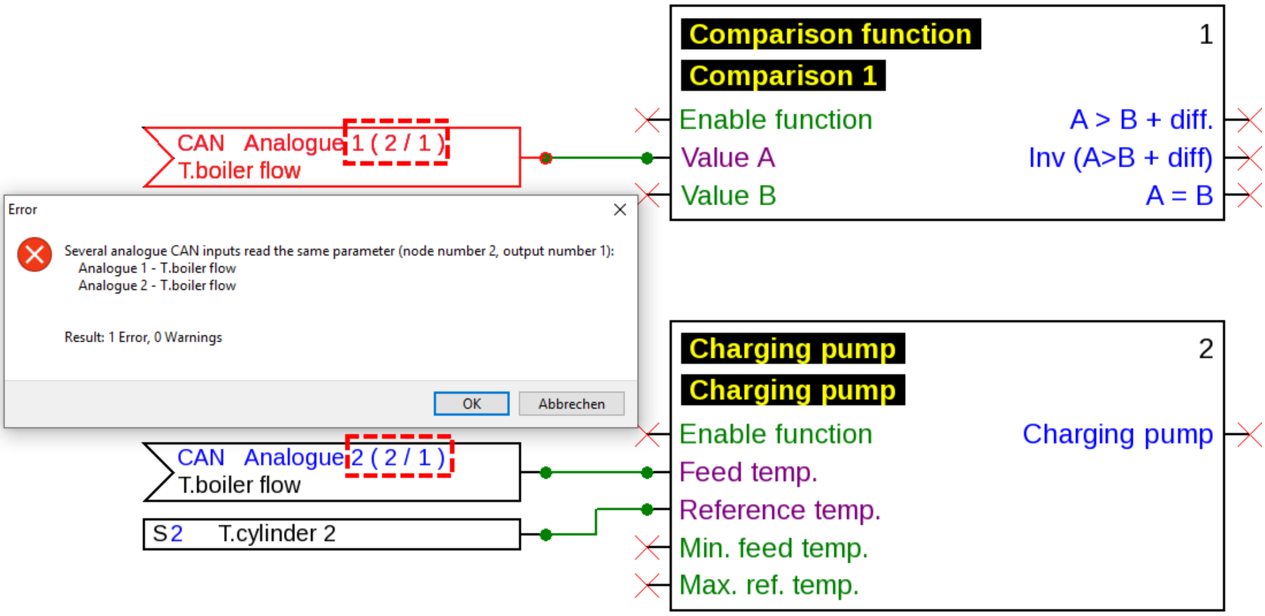


Several network inputs refer to one network output of another CAN-Bus device

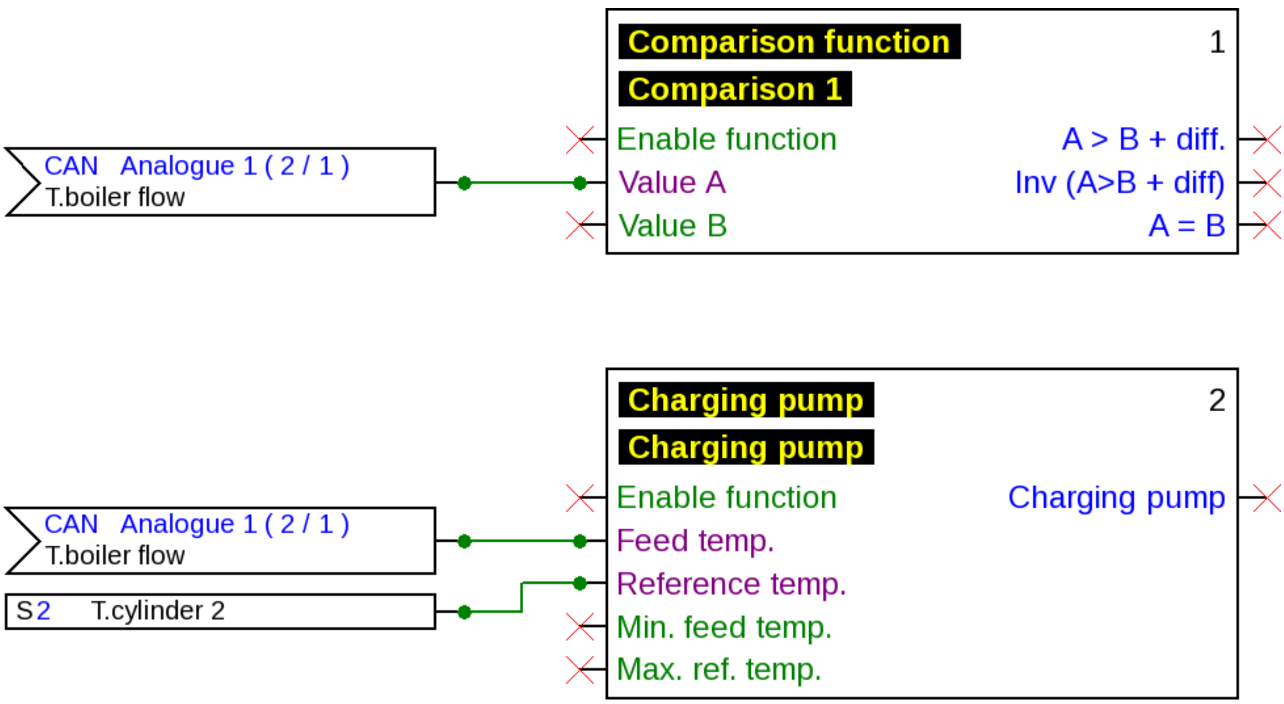
For every parameter which is called up from the network, only one network input may be defined on a single device.

But it is possible to use several symbols for the same network input in the drawing.

INCORRECT:



CORRECT:

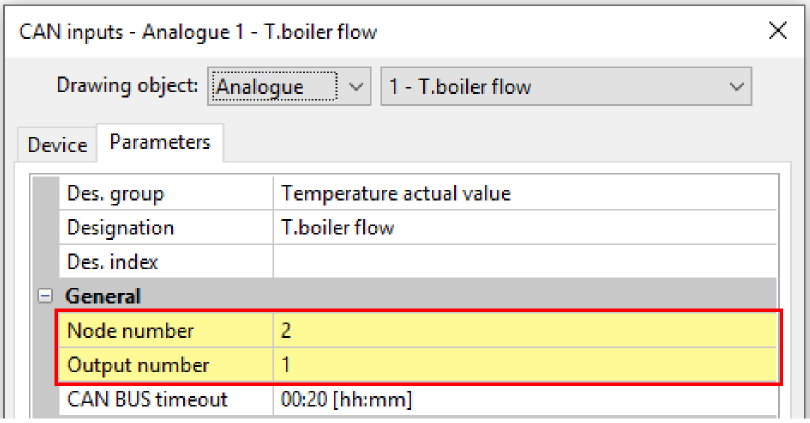


x2 devices only

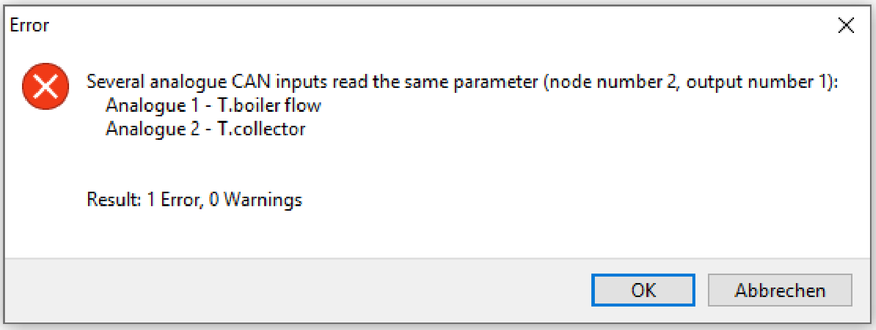
If a **CAN input** with identical parameters is defined for the node number and the output number (of the sender) of an **existing** CAN input, then this error is highlighted with a yellow background.

The same error display is issued for a DL input with the same address and index of an existing DL input.

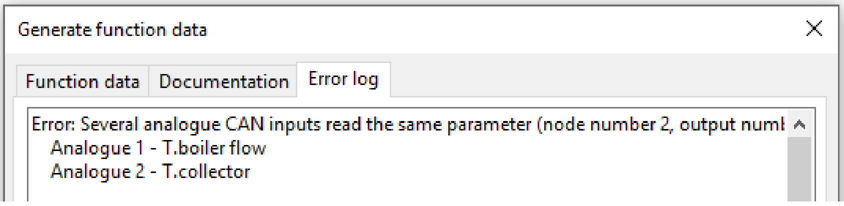
Example: CAN input



If this error is not corrected and the CAN input is opened again, an error message will be displayed:

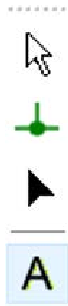


If the error is still not corrected, exporting faulty function data will be prevented and the error log will highlight the cause:



Texts

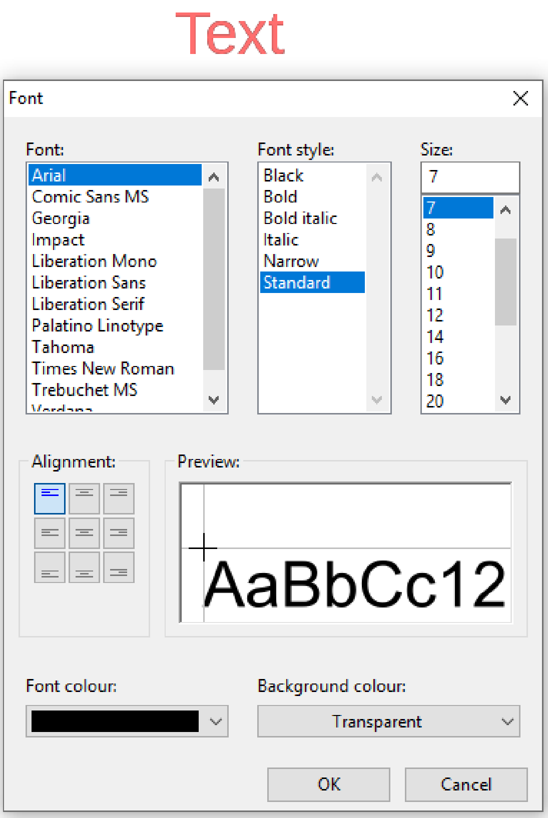
Text insertions



1. A mouse-click on the text symbol A in the right-hand tool bar activates text mode. The cursor in the diagram changes its shape to a "pencil".
2. Positioning the text field  the drawing with a mouse-click.
3. Entry of the text 

4. Clicking in a free drawing area stops the entry.

5. The cursor is still a "pencil" and additional text can therefore be entered. Only when Selection mode (cursor:) in the tool bar is selected will the text mode terminate.
6. If necessary, the **text format** (in Selection mode) can now be changed with a **double click** on the text.



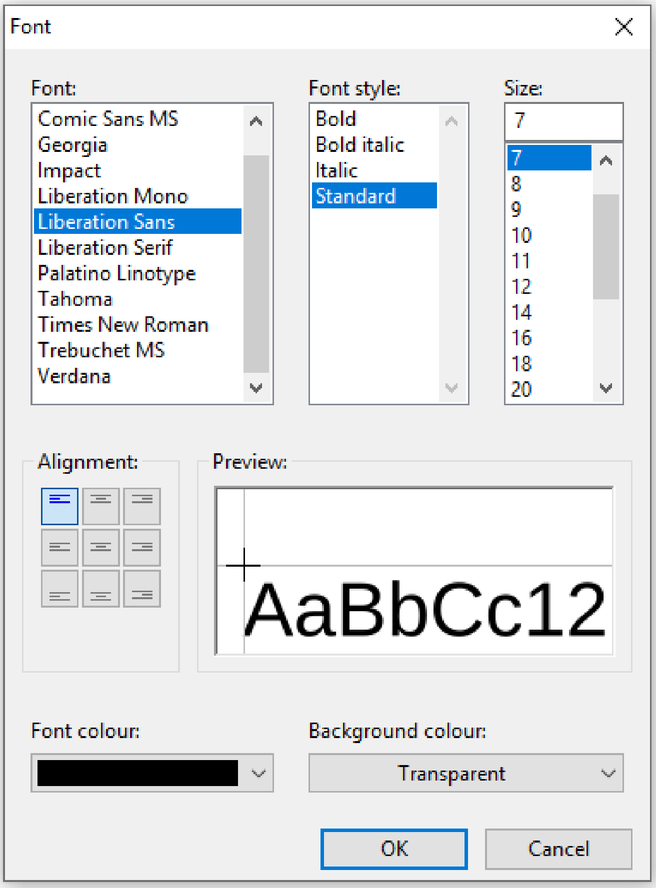
Subsequent editing of the text is possible with **shift** ⇧ **+ double click** on the text or by selecting the tool A (insert **Text**) and a mouse-click on the text.

Texts can be moved, selected and aligned like all others objects.

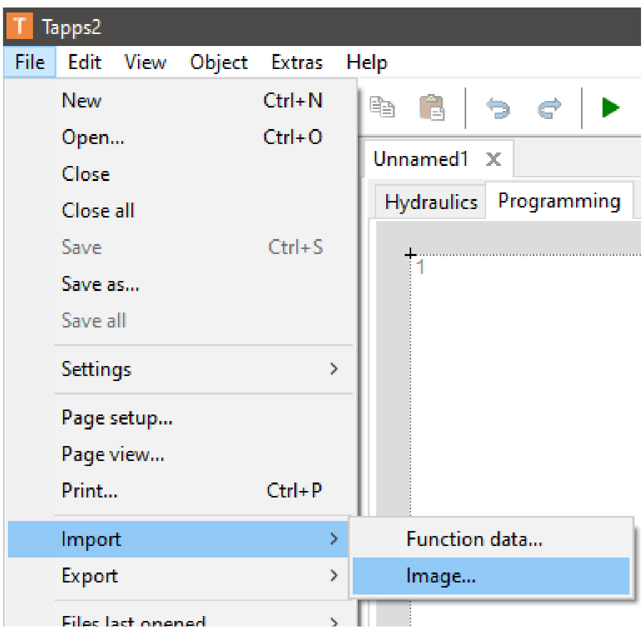
Global text formatting

By selecting **Object / Font**, the font can be formatted for **all** subsequently inserted texts if **no text object** in the drawing is **selected**.

If a text object is selected, the formatting can be changed for this object.GG



Graphics/Images



Small graphics can be placed in the hydraulic system drawing via **File > Import > Image.**

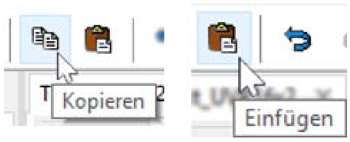
Images must be in **PNG format** and should not exceed a file size of **100 kB**.

Copying objects and texts

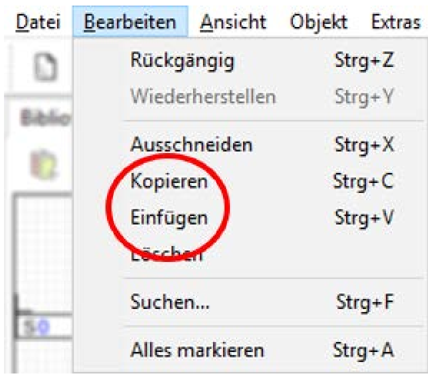
Before copying, the required object or the required object group must be **selected**.

Copying can be done in three different ways:

1. Using the symbols in the top tool bar:



2. Using shortcuts:
   Copy: Ctrl + c
   Paste: Ctrl + v
3. Using the commands under **Edit**:



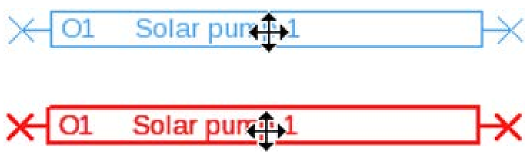
Copying within a drawing

An example explains the individual steps.

Example: Copying an output

1. Selecting the object 

2. Applying one of the three copying methods
3. Trigger the associated **Paste**, the object is now indicated at the cursor.



4. A mouse-click fixes the position of the object. Pasting several times is also possible.

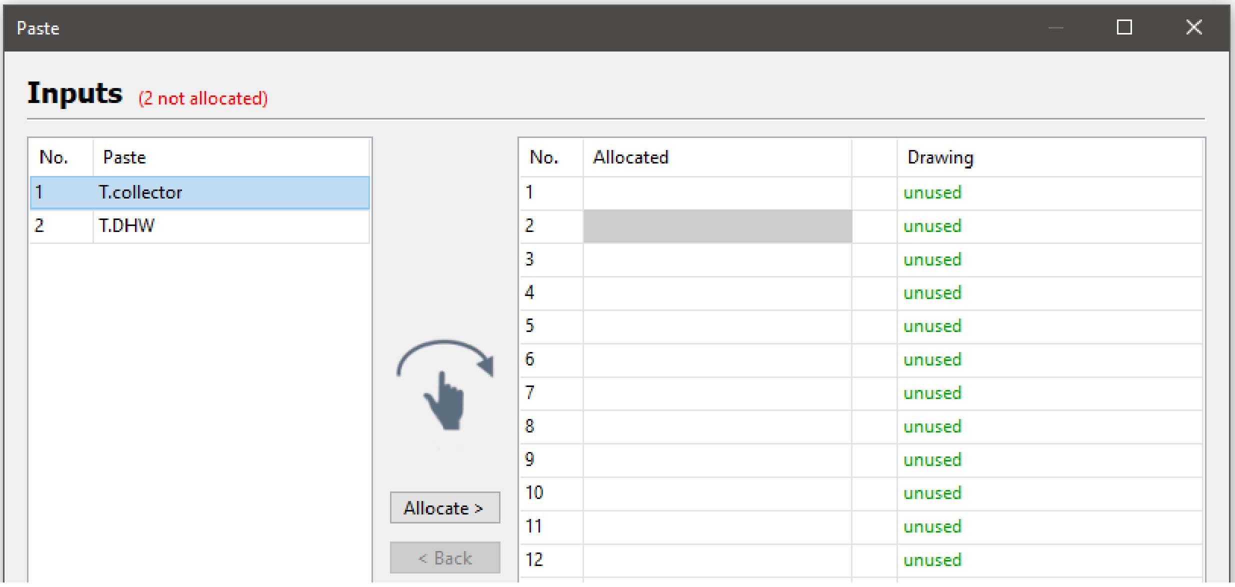
All copied objects adopt the parameters of the original object.

Exception: Functions in which **involved functions** are listed (e.g. solar priority).
If **only** the function is copied, then the **involved** functions of the copied function will be **maintained**.
If **at least one** of the involved functions is also copied, then the involved functions also copied will be listed **as new functions** but with the same designation. The functions that are not also copied return to "not selected". Their parameters must subsequently be set again.

If functions are copied, then the new functions will receive numbers that continue from the last function.

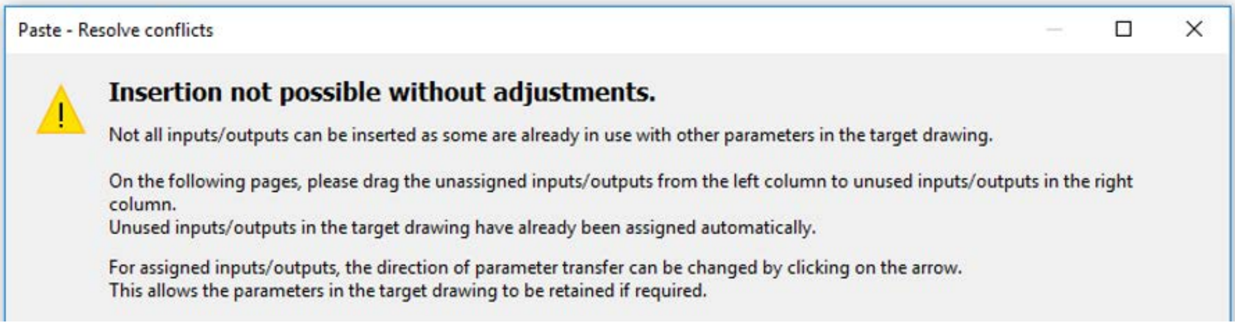
Copying between two drawings

If inputs, outputs and/or fixed values are copied between two drawings, the following window appears.

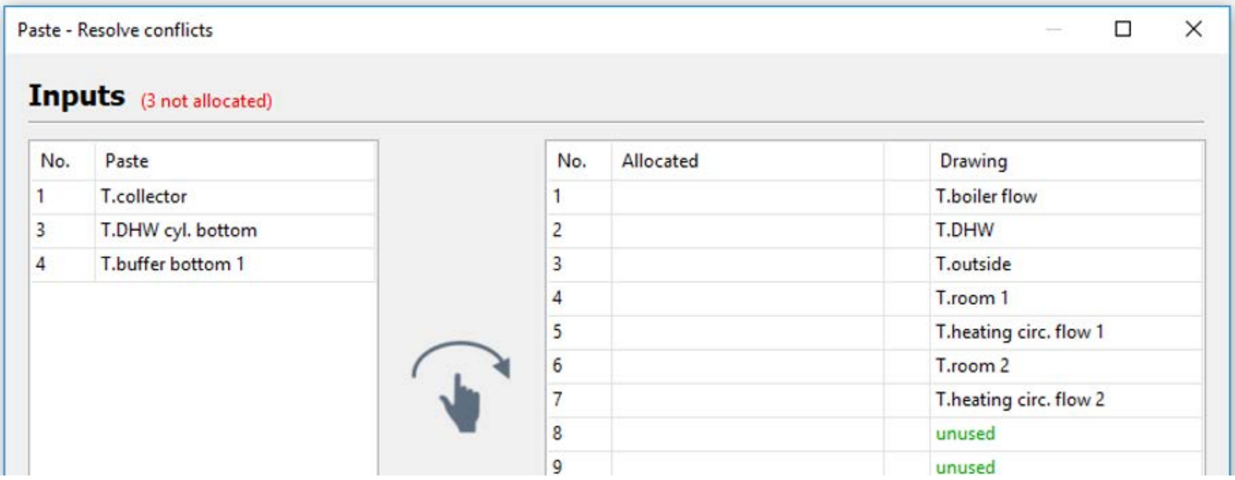


This is used to determine the number with which copied inputs/outputs etc. are to be inserted in the programming. Objects which have already been allocated can be rearranged in the "Allocated" column using drag & drop.

When copying between two drawings, a check is performed to determine whether the elements being copied are already in use elsewhere in the target file.

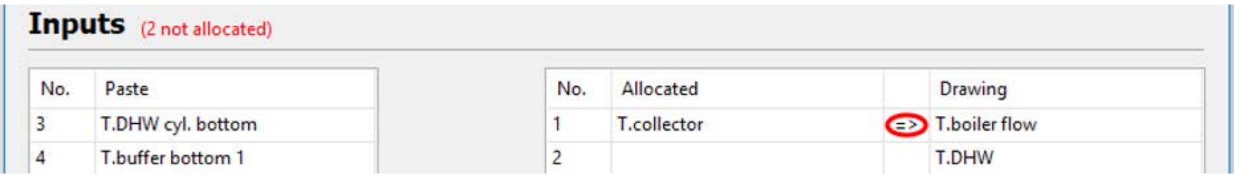


Clicking "Next" starts conflict resolution for the first object type (e.g. inputs).



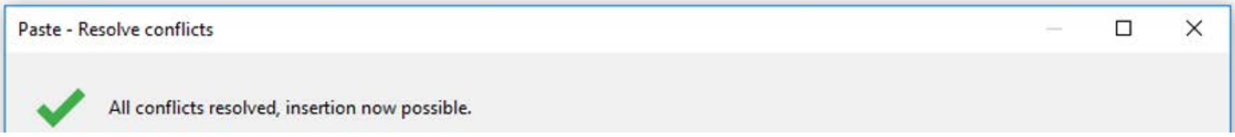
The entries on the left are those which could not be allocated. It is now possible to use drag & drop to insert objects anywhere in the target drawing (= right-hand side). Dragging onto existing entries overwrites these entries. The number of unallocated entries is shown in red at the top, next to the object type (e.g. inputs).

When a value in the target drawing is being replaced, an arrow is shown in the right-hand list.



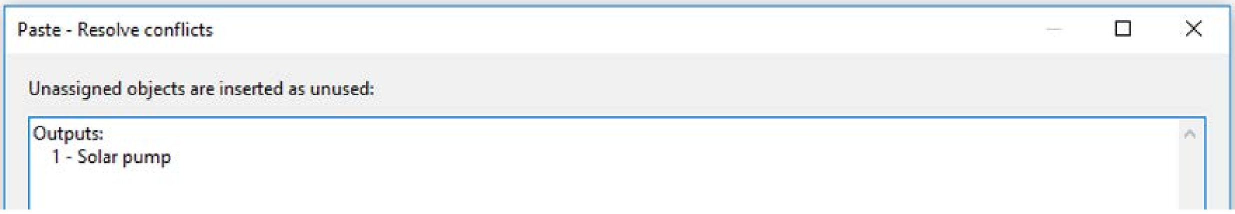
In the example, the arrow indicates that the name and parameter settings of the left-hand value are overwriting those of the right-hand value. Clicking on the arrow reverses this function. Click "Continue" to display the conflict resolution task for the next value type.

After completing the last conflict resolution task, a summary is shown.



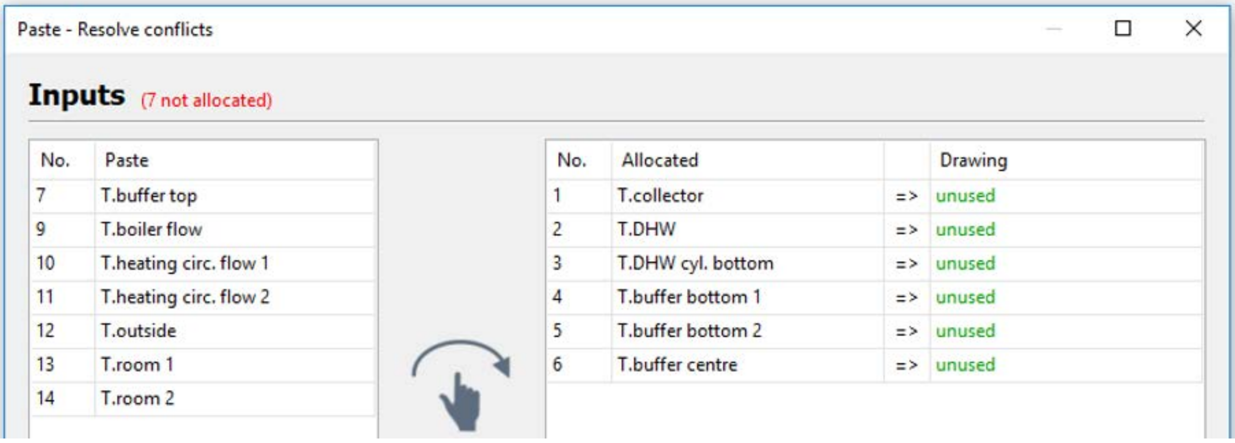
If there are no further conflicts, the summary looks like the one shown above. Select "Finish" to accept the changes and exit conflict resolution. The copied objects can now be inserted by left-clicking.

If any unresolved conflicts remain, these are shown in the last window. In this case, selecting "Finish" will discard the values in the list and insert unused values instead.



Conflicts may also arise when copying objects between drawings on different appliances.

Example: The source file (UVR16x2 programming) has more inputs assigned to it than the target file (RSM610 programming) permits (7 inputs programmed, RSM610 only has 6 inputs).



User defined designations are transferred automatically. However, if the maximum number of user defined designations in the target file is reached, this will also result in a conflict page being displayed.

You may also be prevented from inserting anything at all due to differences between the devices (in which case neither a dialogue box nor an error message is displayed). This can occur, for example, when inserting inputs into the program for a CAN-BC2.

Paste as CAN-Inputs

If there are CAN outputs among the copied objects, they can be converted to corresponding CAN inputs when pasting. You can do this with the command "**Edit > Paste as CAN inputs**" (shortcut: Ctrl+Alt+V); the CAN node numbers, output numbers and descriptions are also adopted.

If CAN inputs are pasted in this way, none of the other elements that you initially copied are inserted.

The CAN inputs are grouped according to analogue and digital inputs, and sorted by input number.

Deleting objects

Highlighted objects are deleted if the **Del** key is pressed, or via Edit > Delete.

If an object (input, output, CAN input, etc.) is deleted, its parameters nevertheless continue to be stored in the programming.

If an object is deleted with **Shift+Del**, the object (if applicable, e.g. input) is deleted and its programming set to **unused**.

Cutting objects

The menu command **Edit / Cutting** or the shortcut **Ctrl + x** can be used to cut out a **selected** object or **selected** object group. They are thus deleted from the drawing but remain in the clipboard so they can be pasted again.

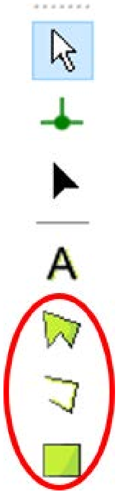
With the **Paste** command or the shortcut **Ctrl + v**, this object can be pasted in the same or any other drawing of **the same controller type**. Pasting several times is also possible.

As with **Copy**, the same conditions for maintaining parameter settings apply.

If functions are cut, the subsequent numbered functions move up in sequence.

The cut function that was pasted into a drawing will receive the number following that of the last function.

Inserting simple drawing objects



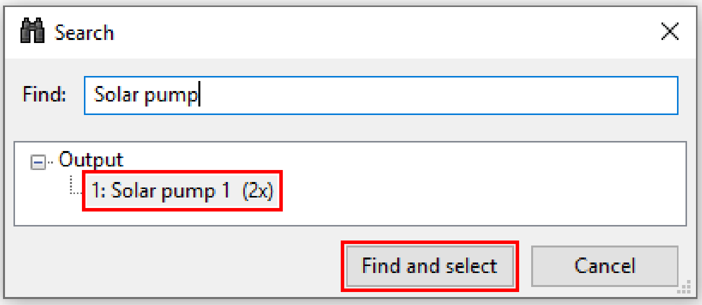
Polygons, **polylines** and **rectangles** can be inserted in the drawing area:

1. Click one of the drawing icons in the right-hand toolbar to activate drawing mode.
   In the drawing, the cursor changes to a "pencil".
2. Click to position the drawing object in the drawing.
3. Additional editing (line type/fill) is carried out as in the "hydraulic" drawing area and is described in chapter "Hydraulics".

Finding objects 

The find function can be used, for example, in extensive programming to search for elements using their full name or type, or just parts thereof.

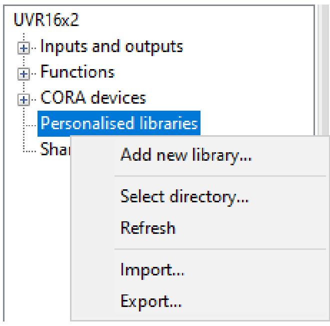
Example: Find "Solar pump"



Result: The output with the designation "Solar pump" appears 10 times in the drawing. Clicking "**Find and select**" high-lights the 10 solar pumps in the drawing in red so they can be found easily.

Personalised libraries

It is possible to create **personalised libraries**.



At the end of the selections, there is an entry "Personalised libraries". Right-clicking on this opens a context menu.

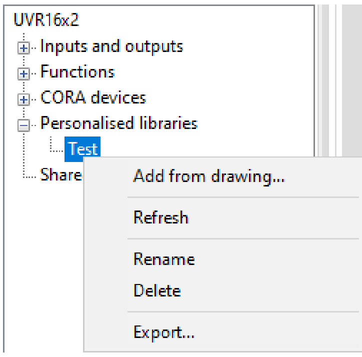
•Add a new Personalised Library

•Select the directory in which Personalised Libraries are saved

•Update Personalised Libraries if they have changed

•Import and export Personalised Libraries

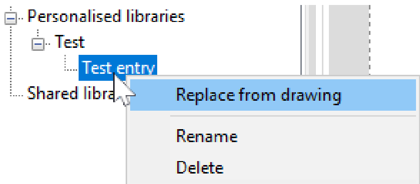
Clicking on *"Add new library..."* opens a dialogue box where the library can be given a name.



To add an entry to the library, select any number of objects in the drawing. Then right-click on the name of the relevant personalised library in the list and select "Add from drawing". The naming prompt appears again.

To paste the entry into a drawing, select it in the same way as any other object and then position it in the drawing.

The parameter settings of all objects added to the library are adopted. Personalised libraries affect all drawings and files.



An entry can be changed by taking it from the library and placing it in the drawing, editing it there, highlighting it and then replacing it in the library with the new version (right-click > "Replace from drawing").

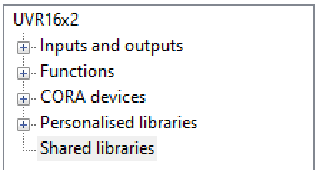
Personalised libraries can be imported and exported as .lib files. Right clicking on "Personalised libraries" and "Export" opens a pop-up window, where you can choose which personalised libraries to export. You then select a folder in which to save the selected personalised library as a separate file.

If you click on "Import", you can follow the same principle to import .lib files.

You can also right-click directly on a personalised library to export this file only.

Personalised libraries are saved as .lib files under *Documents\Technische Alternative\Tapps2\libraries*. This directory can be amended (right-click > "*Select directory*").

Shared libraries



Libraries can be shared between multiple users.

There is a separate additional entry for this, "Shared libraries".

To be able to use "Shared libraries", first of all a directory needs to be specified (right-click > "Select directory...").

Note that all computers with the same network protocol (SMB or NFS) can access the "Shared libraries" directory on the fileserver.

TAPPS2 automatically combines changes from multiple users of the same library.

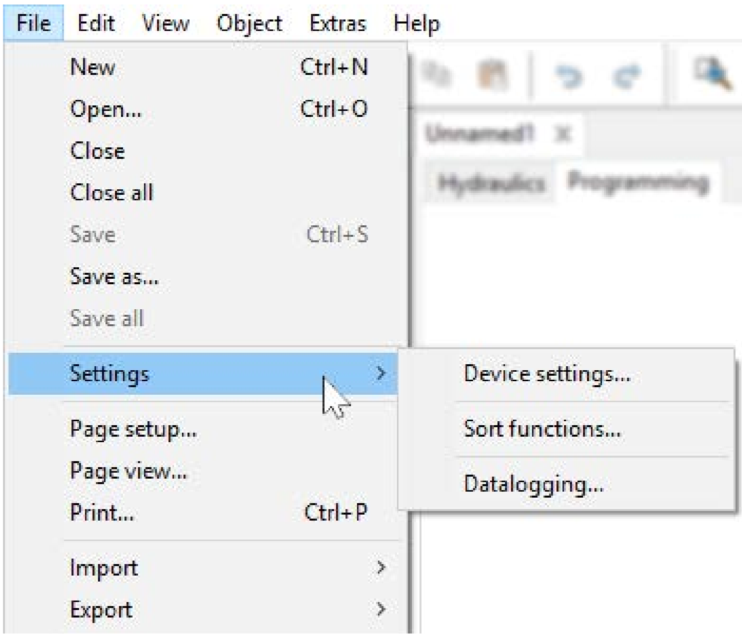
If the same element is being edited simultaneously by multiple users outside the library and is then replaced in the library, however, it is not possible to combine these changes.

If changes have been made to a library outside the program, e.g. by another user, the library is automatically reloaded before your own changes are made.

A library can also be reloaded manually with right-click > "Refresh".

Settings

In the **Settings** menu, the following general settings can be made for the controller:

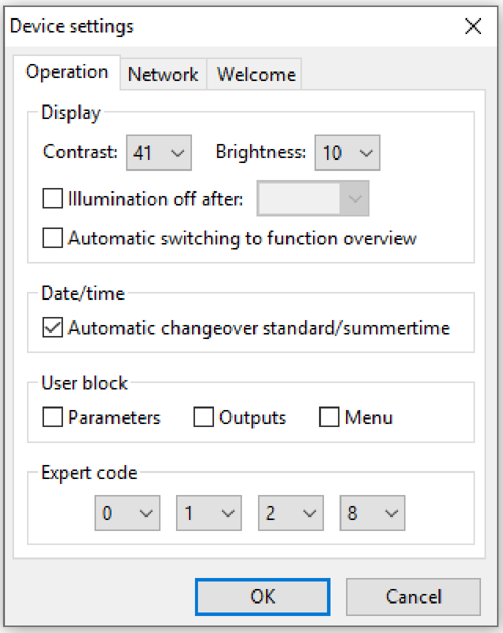


•Device settings
•Sort functions and messages
•Configure CAN data logging

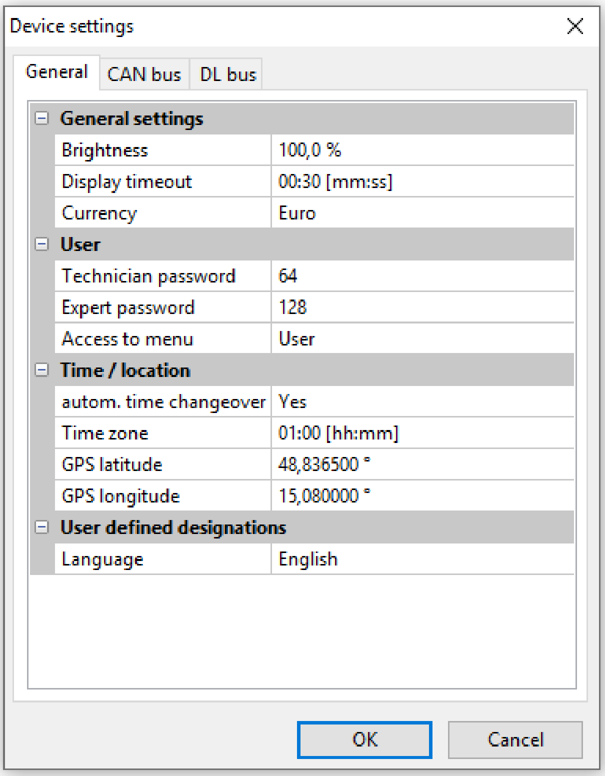
Device settings

Depending on controller type, the default settings for the controller, the network settings and the welcome screen can be set here.

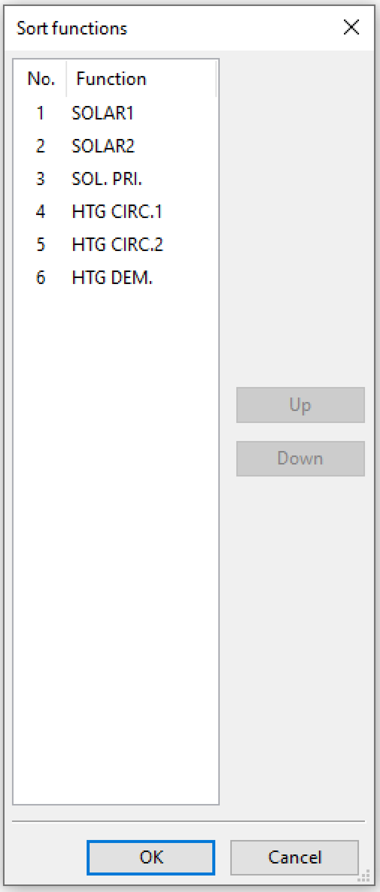
UVR1611



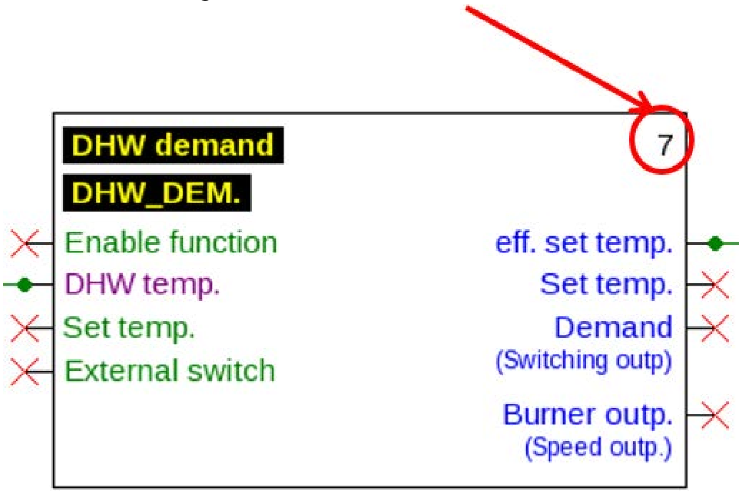
Devices with x2 technology (e.g. UVR16x2)



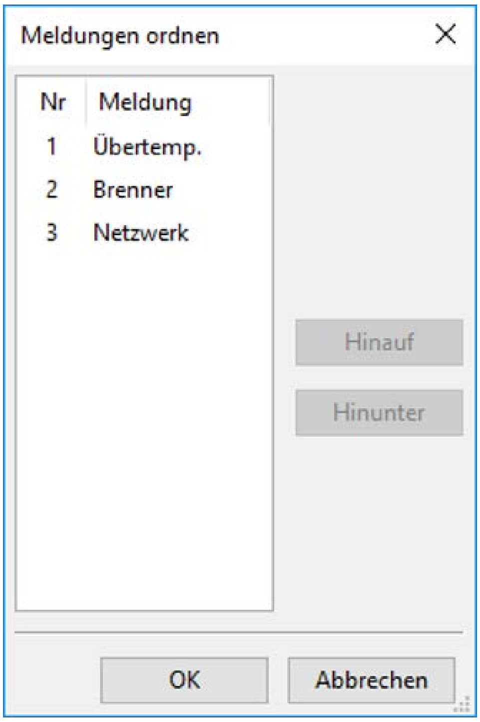
Sort functions and messages



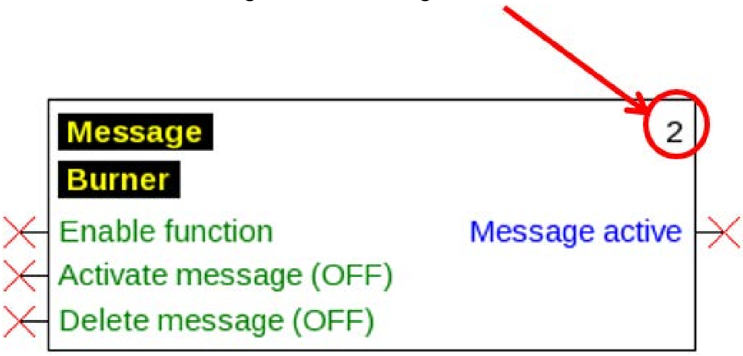
The sequence of the functions as displayed in the controller can be changed in this menu.
This will also change the function **number** in TAPPS2



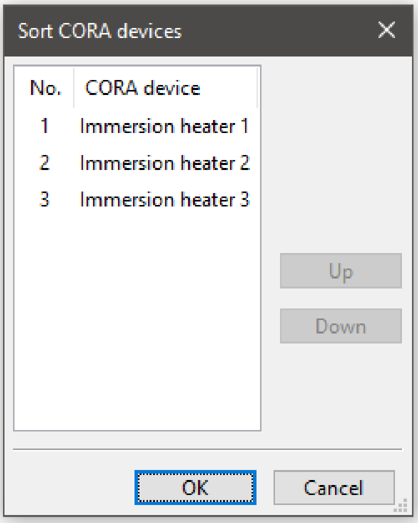
Only for UVR1611:



The sequence of the messages as displayed in the controller can be changed in this menu.
This will also change the message **number** in TAPPS2.

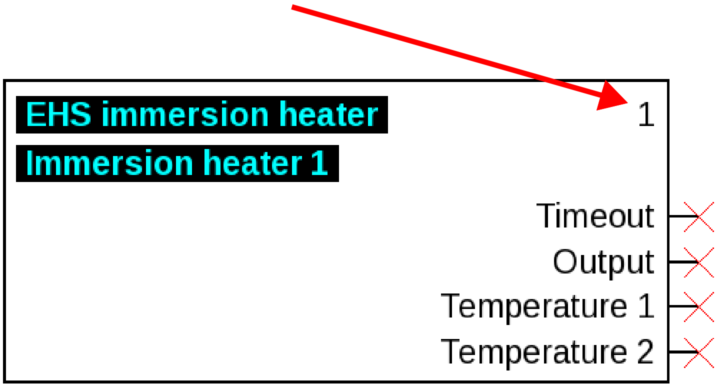


Sorting CORA devices

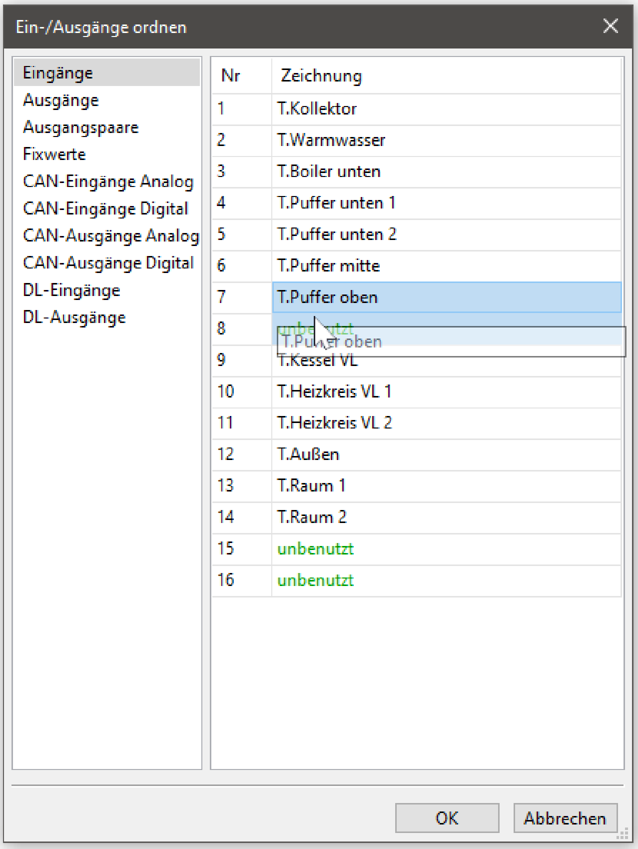


In this menu, the order of the functions as they are displayed in the controller can be changed.

This also changes the number of the function in TAPPS2.



Sorting inputs/outputs



In this menu, the assignment of inputs and outputs can be changed.

Inputs/outputs can be assigned to empty spaces or swapped with each other. These changes apply to all existing drawing objects.

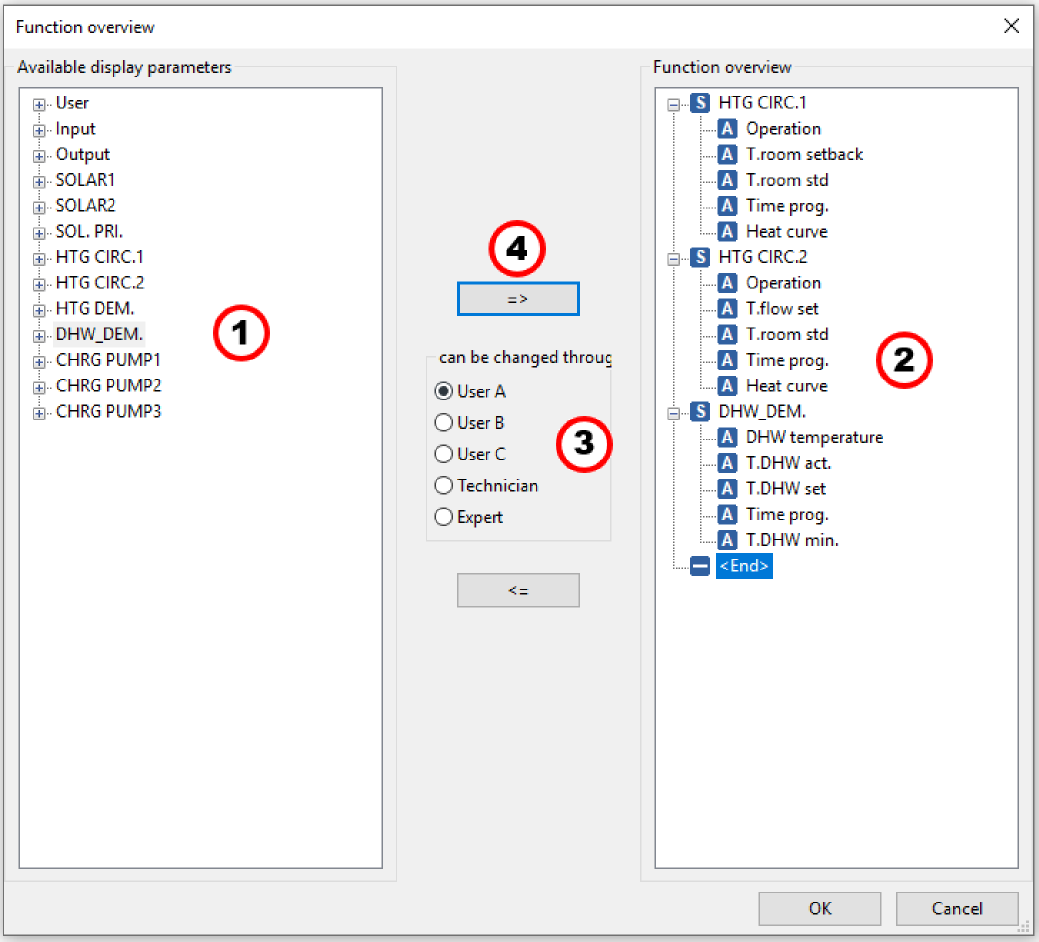
When rearranging CAN outputs, the corresponding CAN input at the receiver must be adjusted.

Likewise, an existing visualisation (TA-Designer) must be updated after rearranging inputs/outputs. If a .dat file is exchanged there, the TA-Designer does not recognise rearranged inputs/outputs. Manual adjustments have to be made.

Function overview UVR1611

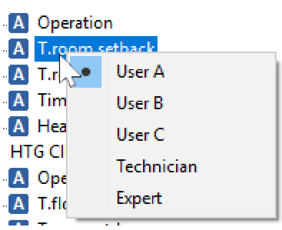
The function overview is a menu screen in the controller that serves to display only the information that is important to the customer.

The parameters displayed there can also be allocated with an authorisation for changing set values.

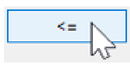


Procedure for inserting a display parameter into the function overview:

1. Select the parameter that is to be displayed in the function overview from the list of available parameters.
2. Select the position above which the display parameter is to be inserted from the list of function overview parameters.
3. Select the authorisation for changing the parameter.
4. Insert the selected display parameter in the function overview.



A click with the right-hand mouse button on a selected parameter opens a selection menu where the authorisation level can be changed.

Elements are deleted in the function overview within the same manner: 

Function overview UVR16x2

The function overview for UVR16x2 is created with the **TA-Designer** program.

CAN data logging

x2 devices

Minimum versions:

C.M.I. 1.25

Winsol 2.06

Up to 64 analogue and 64 digital values can be defined for CAN datalogging for x2 devices.

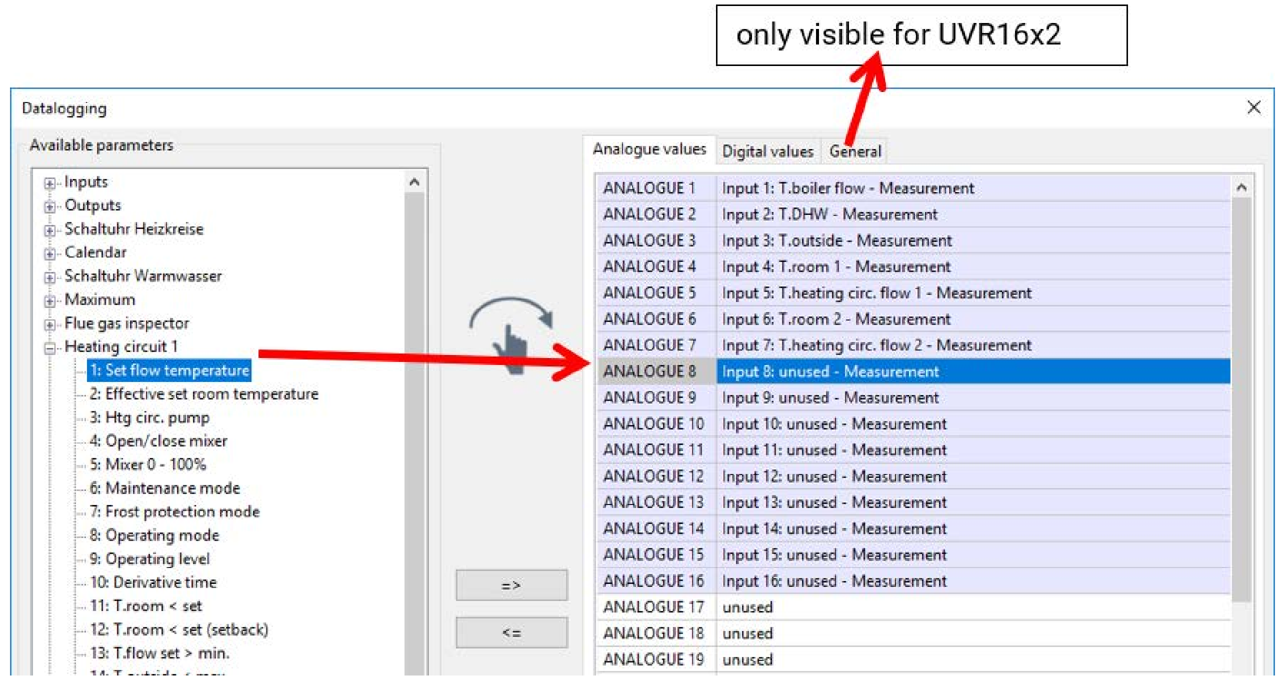
The left column shows all the available parameters that can be added to the right column. The right column has the tabs "Analogue values" and "Digital values". Therefore, when new logging values are inserted, it is important to check whether the value is an analogue value (numerical value) or a digital value (ON/OFF).

Procedure for linking a parameter into data logging:

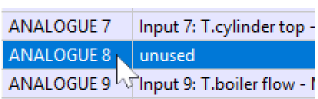
There are 2 options:

1. Selection of the value to be logged from **Available parameters** on the left and dragging it to the logging value where it should be displayed (drag & drop).

   Example: The set flow temperature for heating circuit 1 is to be logged as analogue value 8.



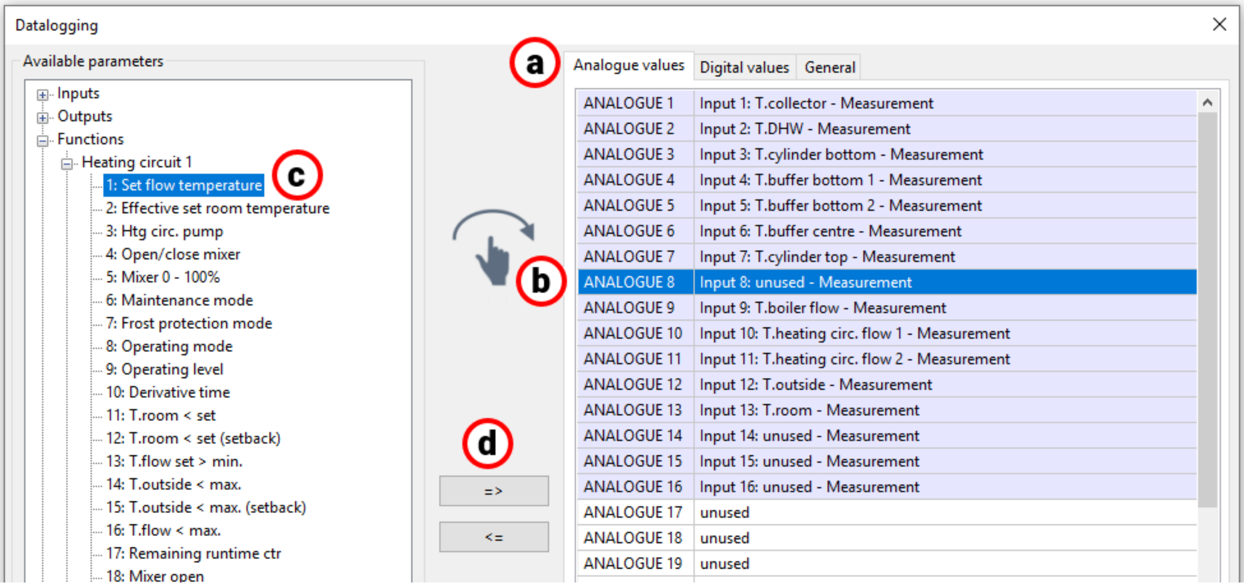
It is possible to select several values simultaneously using the Shift or Ctrl key.



To remove values, select them and press the "Delete" key on the PC keyboard to set them to "unused".

2. Using the arrows to overwrite or delete the entries in the list on the right
   a) Select the **data type** in the right column (analogue/digital).
   b) Highlight the **position** where a new parameter is to be inserted into the list.
   c) Select the parameter which is to be incorporated from the list of "**Available parameters**".
   d) Insert the selected parameter into the list on the right by clicking **=>**. After the parameter has been inserted, the following parameter is automatically selected.

Example: Inserting the heating circuit set flow temperature into "Analogue values" as "Analogue 8"

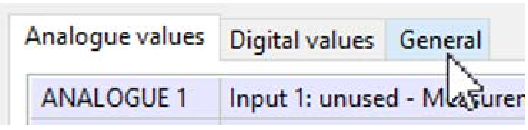


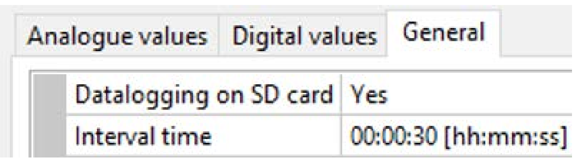
It is possible to select several values simultaneously using the Shift or Ctrl key.
Selected values can be reset to "unused" by clicking the back arrow (**<=**).

Datalogging on the SD card of the UVR16x2

Minimum controller version: V1.24

Under the "General" tab, you can define whether the logging values are stored on the controller SD card and if so, at what intervals.





Example: datalogging on the controller SD card has been selected. The interval time is 30 seconds.

UVR1611

For CAN data logging, two data records can be freely defined. One data record comprises 16 analogue and 13 digital parameters.

The left-hand column shows all available parameters that can be added to the data record in the right-hand column. In this respect the following details must be observed:

Speed stages of outputs 1, 2, 6 and 7:

To record the speed stage of an output, the digital parameter with the same number must be allocated to the output in data record 1.

Heat meter functions:

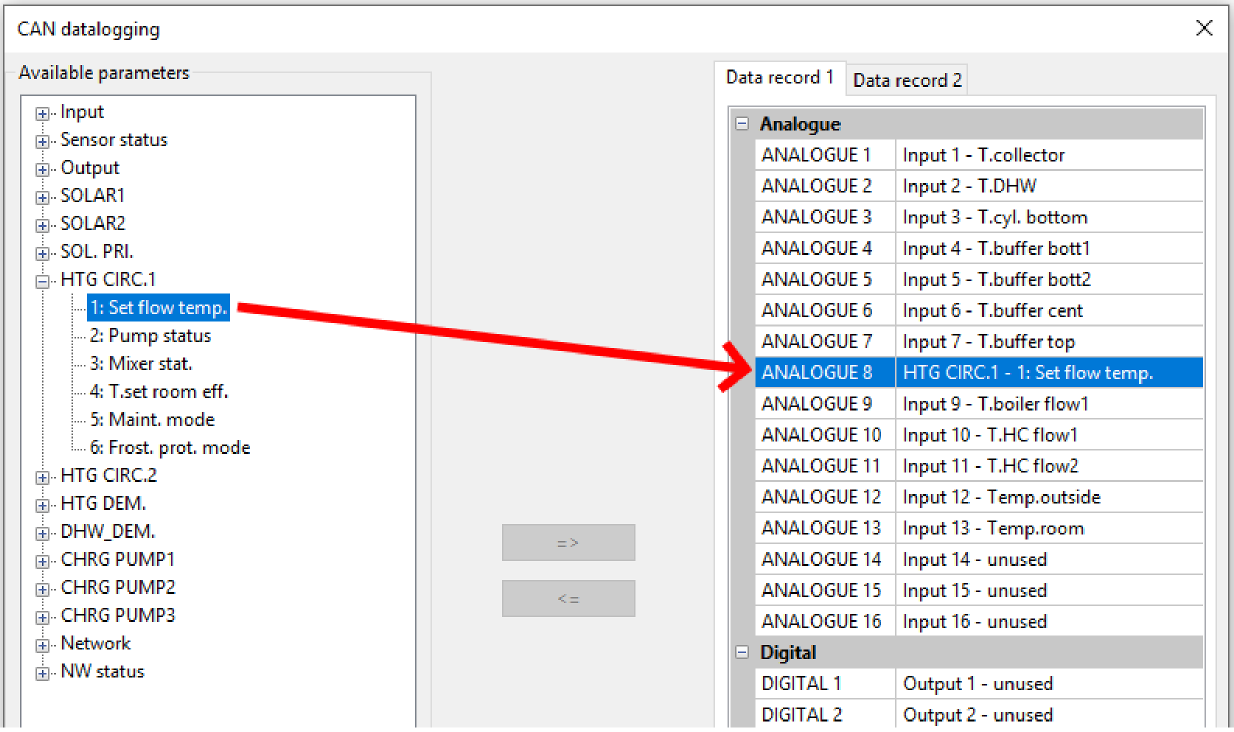
The output variables of the heat meter functions are, according to the sequence in the function list, **automatically** linked to the two data records (heat meters 1 and 2 in data record 1, heat meters 3 and 4 in data record 2). Although Winsol can log the output variables in a data record, they are displayed with the incorrect unit (°C). When correspondingly high values are reached, these can no longer be displayed correctly in the diagram and are no longer meaningful.

Procedure for linking a parameter into data logging:

There are 2 options:

1. Selection of the value to be logged from **Available parameters** on the left and dragging it to the logging value where it should be displayed.

   Example: The set flow temperature of heating circuit 1 should be logged as analogue value 7 of data record 1

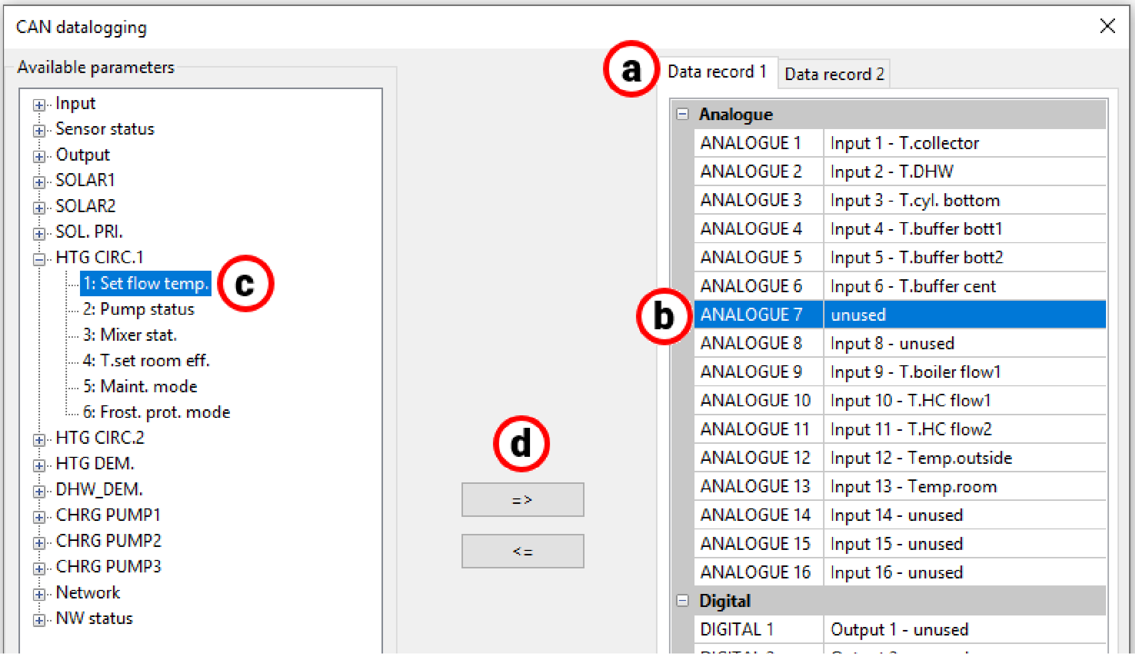


   To remove a value from the data record, select it and use **Del** on the PC to set it to **unused**.

ANALOGUE 6	Input 6 - T.buffer cent
ANALOGUE 7	unused
ANALOGUE 8	HTG CIRC.1 - 1: Set flow temp.

2. Use of the arrows to overwrite or delete the entry in the data record
a) Select the **data record** to be defined from the right-hand column.
b) Select the **position** in which a new parameter is to be inserted in the data record.
c) Select the parameter that is to be inserted in the data record from the list of **available parameters**.
d) Use **=>** to insert the selected parameter into the data record. After insertion of the parameter, the data record automatically selects the following parameter.

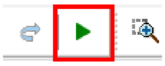
Example: Inserting the set flow temperature of heating circuit in data record 1 as **Analogue 7**



The back arrow (**<=**) can be used to reset a selected value in the data record to **unused**.
The **Master node** is the node number of the C.M.I. or BL-NET.

Simulation

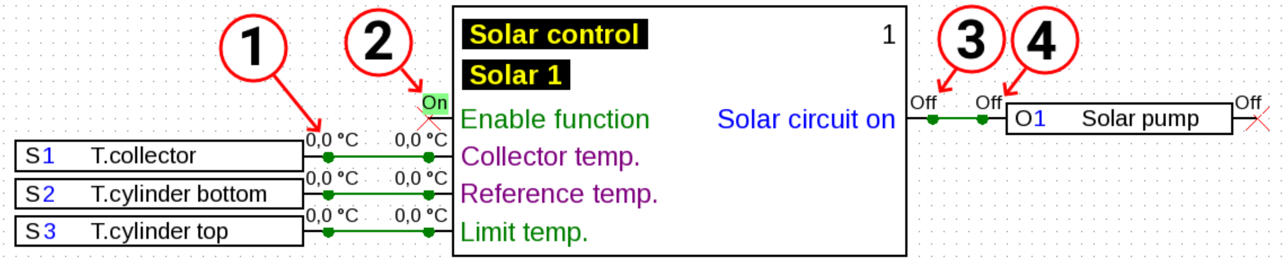
As of version 1.16, function data can be simulated directly in TAPPS2.



Clicking the "Start simulation" button (on the taskbar at the top) simulates the current programming.

The x2 simulator (minimum version 1.38) must be installed on the PC. (ta.co.at/download/software/)

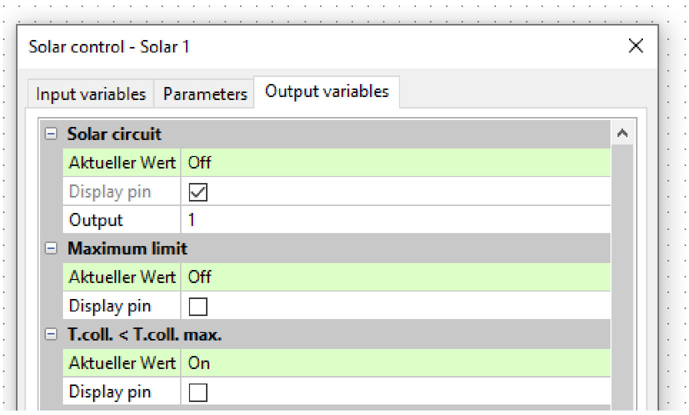
Example



1. **Value of the sensor input.** Click on the numerical value to change it.
2. **Digital input variable.** The status of digital values is displayed here (e.g. On/Off).
3. **Status of the output variable.** The output variable of the function is displayed. It cannot be changed manually as it reflects the actual result of the function calculations.
4. **Status of the output.** The status of the output is displayed.

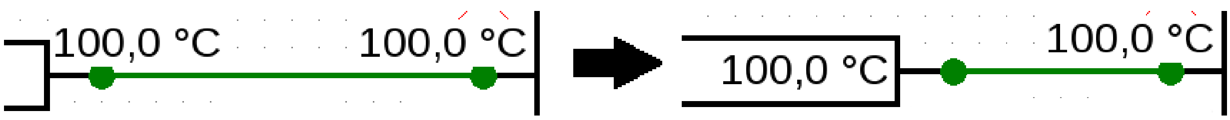
The programming cannot be changed once the simulation has been started. If, for example, a new function needs to be created, you first have to exit the simulation. This does **not** apply to simulation values of input variables, fixed values, etc.

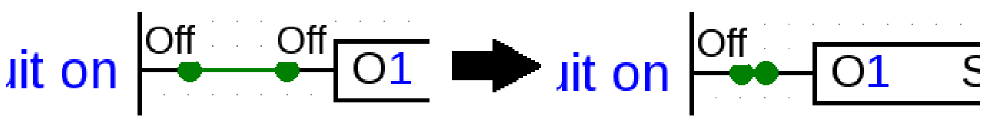
Double-click on a function to view the values of all output variables, even if their pins are hidden in the programming:



Parameters of functions, fixed values, inputs and outputs can be changed, but you have to exit the simulation to apply the changes.

Values that do not have enough space to be displayed are added to the corresponding drawing object:



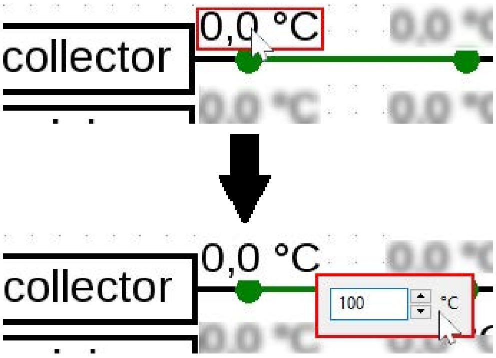


Changing values

During the simulation, values such as sensor inputs and similar can be adjusted to simulate the control effect of the programming under various circumstances. In addition to sensor inputs, input variables, etc., values appear that you can click on.

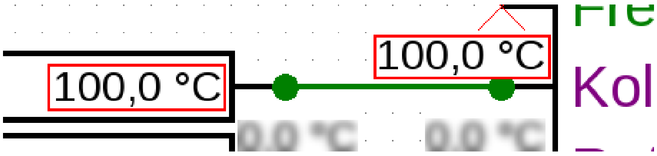
Analogue values

Example: Sensor input



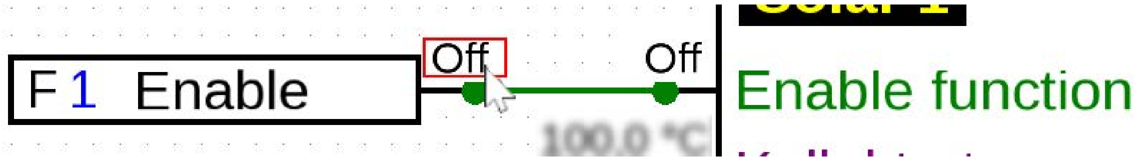
The value can be changed with the arrow buttons, scroll wheel or by entering numbers directly.

The input variable to which the sensor input is connected adopts this value:

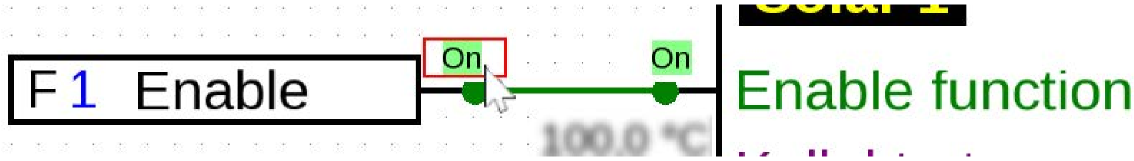


Digital values

Example: Digital fixed value



If you click on the field with the status of the digital value (e.g.: "Off"), it is changed (e.g. to "On"):



Pulse

Example: Resetting a heat meter using a fixed pulse value

The field changes briefly to the pulse that is issued and then returns to the normal display.

Pulse inputs for e.g. wind speed are set in the same way as analogue inputs.

Temporal mean value calculation

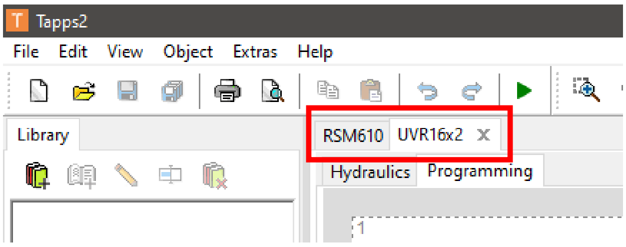
In simulations, temporal mean value calculation is disabled. This means:

- No temporal mean value calculation of the outside temperature in heating circuit control, cooling circuit control or individual room control.
- Analogue function, filter mode: simulation with "filtering time" = 0.
- No temporal mean value calculation for inputs.

CAN bus simulation

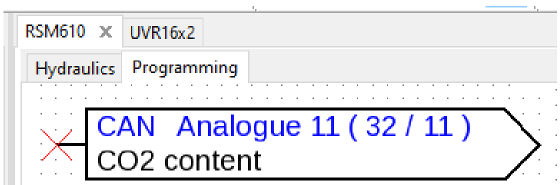
CAN bus inputs and outputs can also be simulated for all devices.

For this purpose, multiple programming functions (up to 62) are opened in the same TAPPPS2 window.

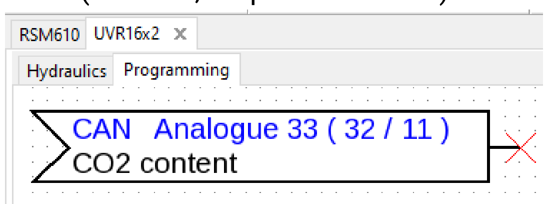


The CAN bus inputs and outputs are created in the usual way in the respective programming functions. If the node numbers and output numbers match, the program automatically recognises the relationship.

CAN output from node 32 and output number 11

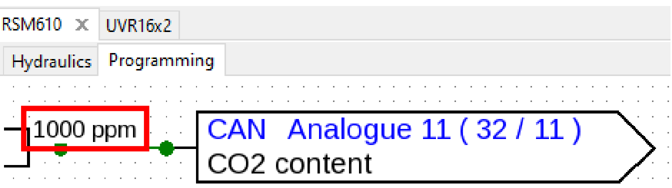


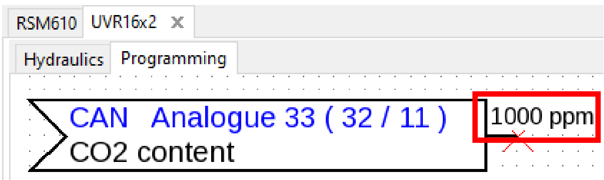
The value is read in again as a CAN input (node 32, output number 11)



The node number of the device which sent the value to the CAN bus (on the left in the example) is changed via **File > Settings > Device Settings > CAN Bus**.

If the simulation is now activated in **both** projects with ▶, the value is synchronised between them.



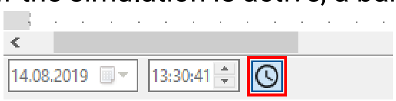


The simulation of the CAN bus inputs and outputs does not take into account their send conditions.

Date/time/Mean value calculation

The date and time can either be taken from the PC or set by the user.

If the simulation is active, a bar appears at the bottom:



In this example, the values are greyed out and cannot be selected. The date and time are therefore taken from the PC.

Click on the clock symbol to change the date and time and use them for the simulation.

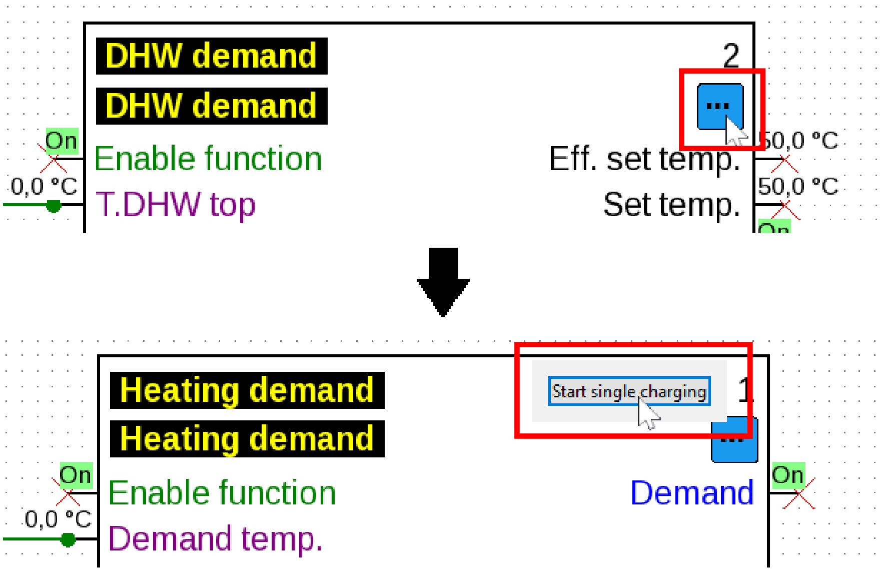
Changing the time only affects functionalities that actually relate to the time. Values such as remaining runtimes or timers are not influenced by the time.

Buttons

Many functions have buttons which can be pressed on the controller itself in the menu or in the function overview, e.g. "**Start single charging**" for the **DHW demand** function.

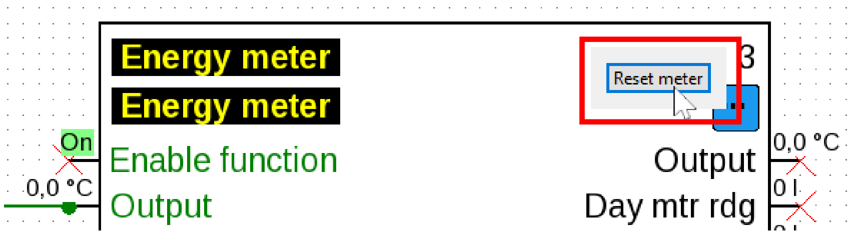
As of version 1.19, these buttons can also be actuated in simulation mode.

Example: Start single charging



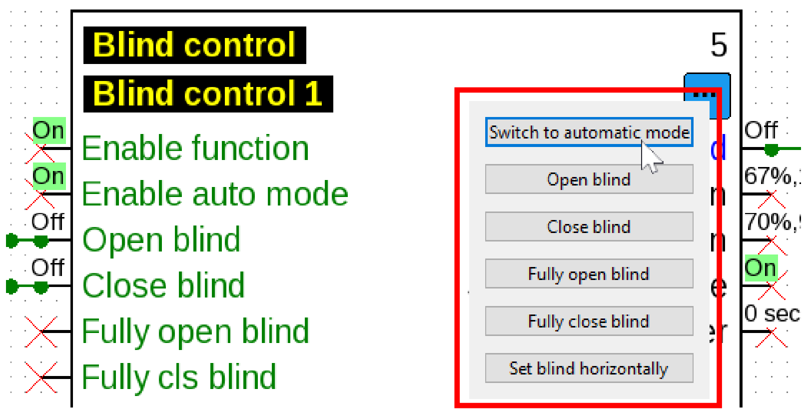
A single click triggers the charging process.

Example: Meter reset



A single click resets the meter.

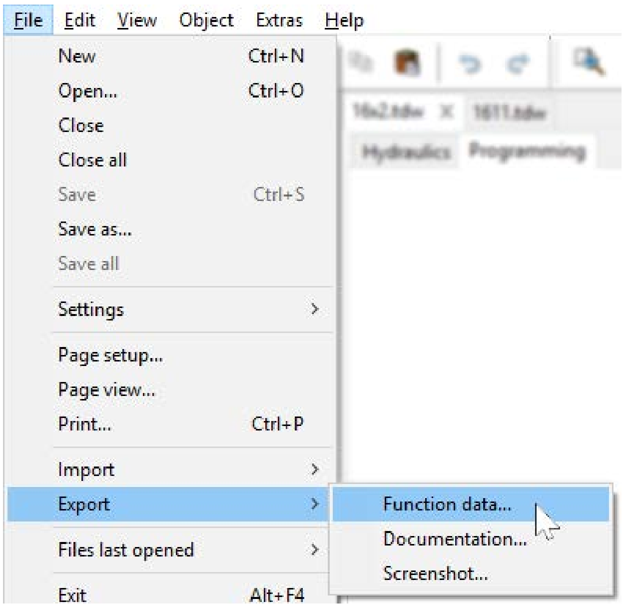
Example: Blind control



The "Open blind" and "Close blind" buttons are actuated by holding down the mouse button. The other buttons are clicked once.

Generating function data and documentation

Function data

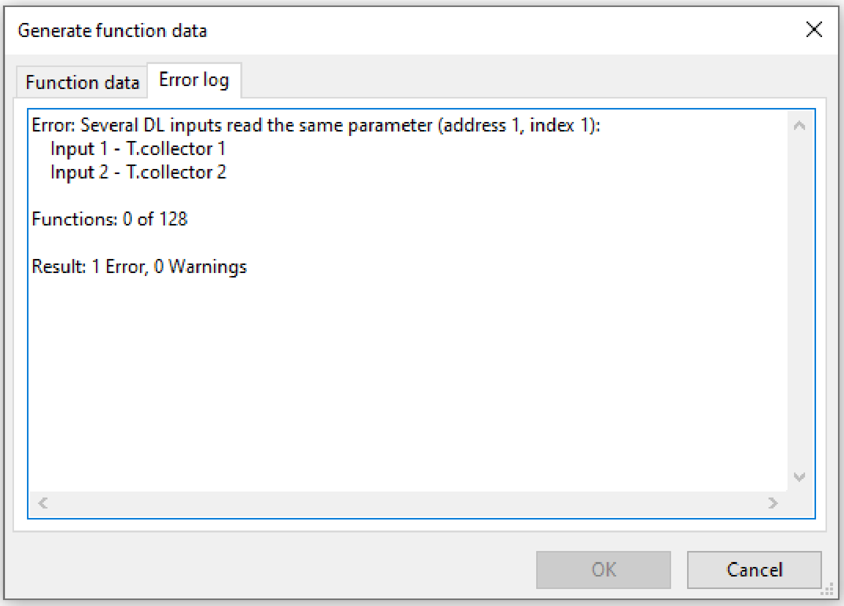


With **File / Export / Function data** or **File / Export / Documentation**, the function data (*.dat file) and the documentation (*.txt file) can be generated.

If the programming is faulty, an error log listing the errors is generated before generating the function data.

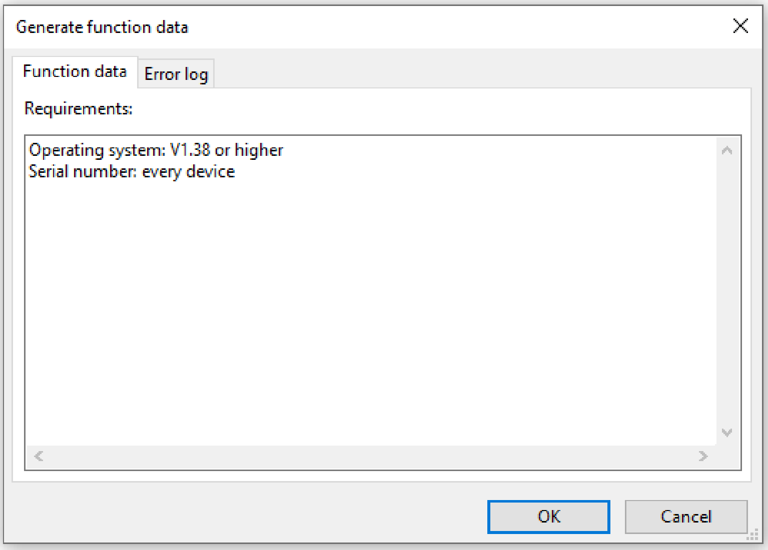
Function data and the documentation can be generated only after all errors have been removed.

Example of an error log:

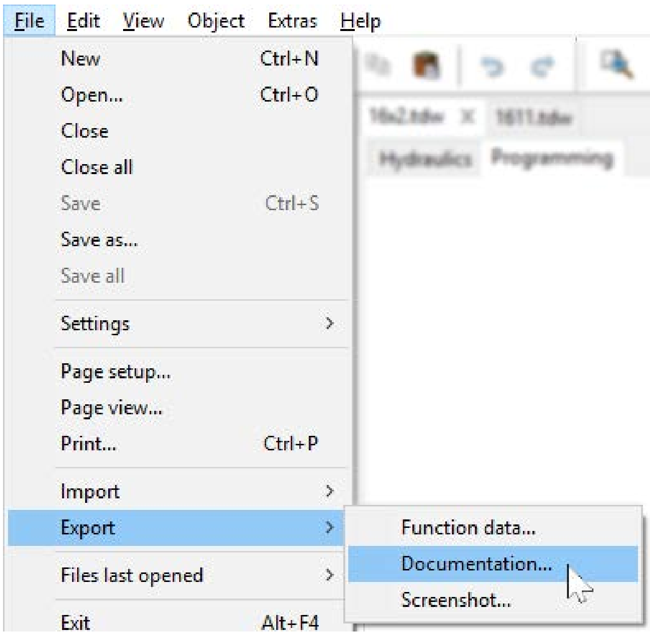


Before saving the function data, the minimum requirements for the operating system and the serial number must be checked and observed in accordance with the specification of the controller type.

Example UVR16x2:

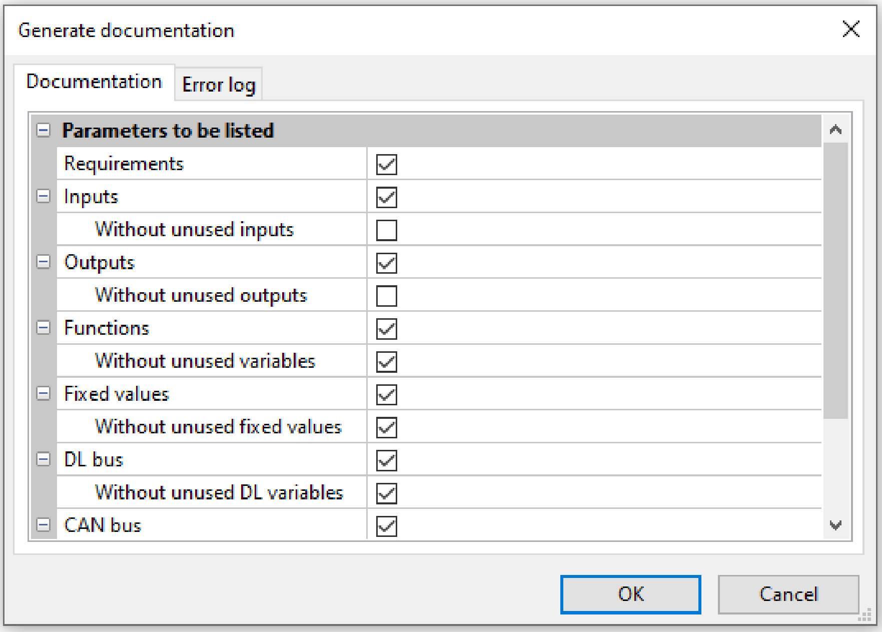


Documentation

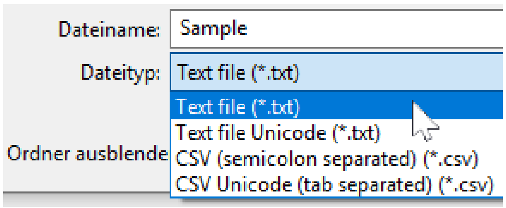


Unused parameters can be filtered out before saving the documentation.

Example UVR16x2

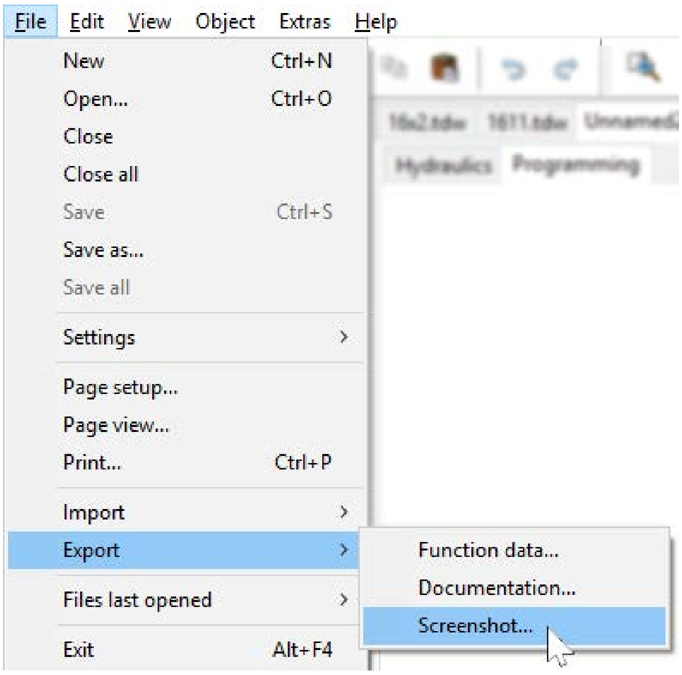


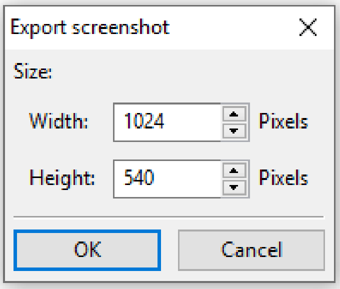
The documentation can be created in different file formats as required:



Exporting a screenshot

This functionality makes it possible to export the **visible section** of the drawing area as a PNG or JPEG file.



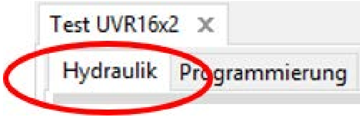


The required image size is entered to fit the display screen. The height/width proportions are kept the same.

Drawing function under „Hydraulics“

A hydraulic drawing is created under "**Hydraulics**", which is displayed under the file name.

Example:



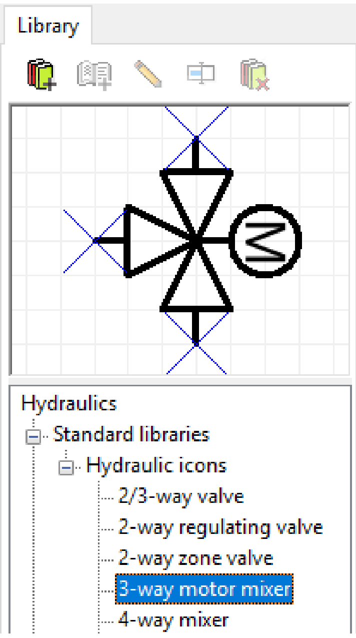
Navigating within the drawing area (selecting, zooming, moving, bringing forward/backward, aligning, copying) and dealing with **links** are exactly the same as under "**Programming**" and are described there.

Note on lines:

If the Shift key is pressed before a **diagonal** line is completed, it changes to an **orthogonal** line (horizontal or vertical).

Libraries

Standard libraries



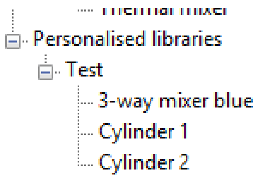
The program provides various hydraulic icons in a **standard library**.

These icons are available on the left-hand side in a search tree.

The selected element is displayed in the preview window above.

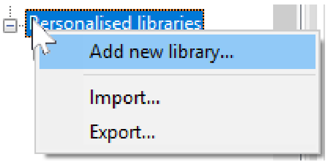
Icons are inserted into the drawing in the same way as objects are inserted in the programming area.

Personalised libraries in hydraulic drawings

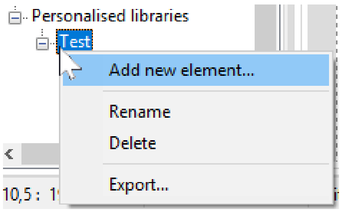


It is also possible to create **personalised libraries** with personally designed elements. In the example, the personalised library "**Test**" and 3 personalised elements have already been created. The selected element is displayed in the preview window above.

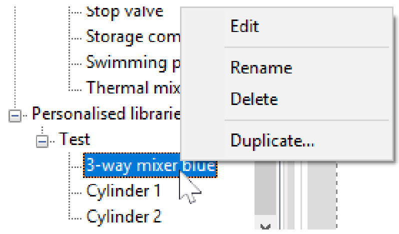
Editing is possible by right-clicking the relevant element:



Create a new library



Create elements or edit the library



Edit elements

Personalised libraries and elements can also be created and edited using the tool icons in the library area.

Shared libraries in hydraulic drawings

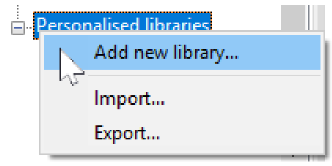
The principles of shared libraries are described on page 63.

While a hydraulic symbol is being edited in a library, that library is unavailable to all other users.

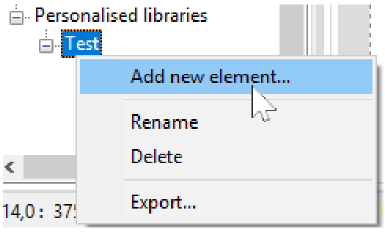
During this period, no other users can make changes to the library.

Creating and editing library elements

The **standard library** elements cannot be changed in the library. Standard elements **in the drawing area** can be changed using the Icon editor.



Personalised library elements can only be set up once a personalised library has been created.

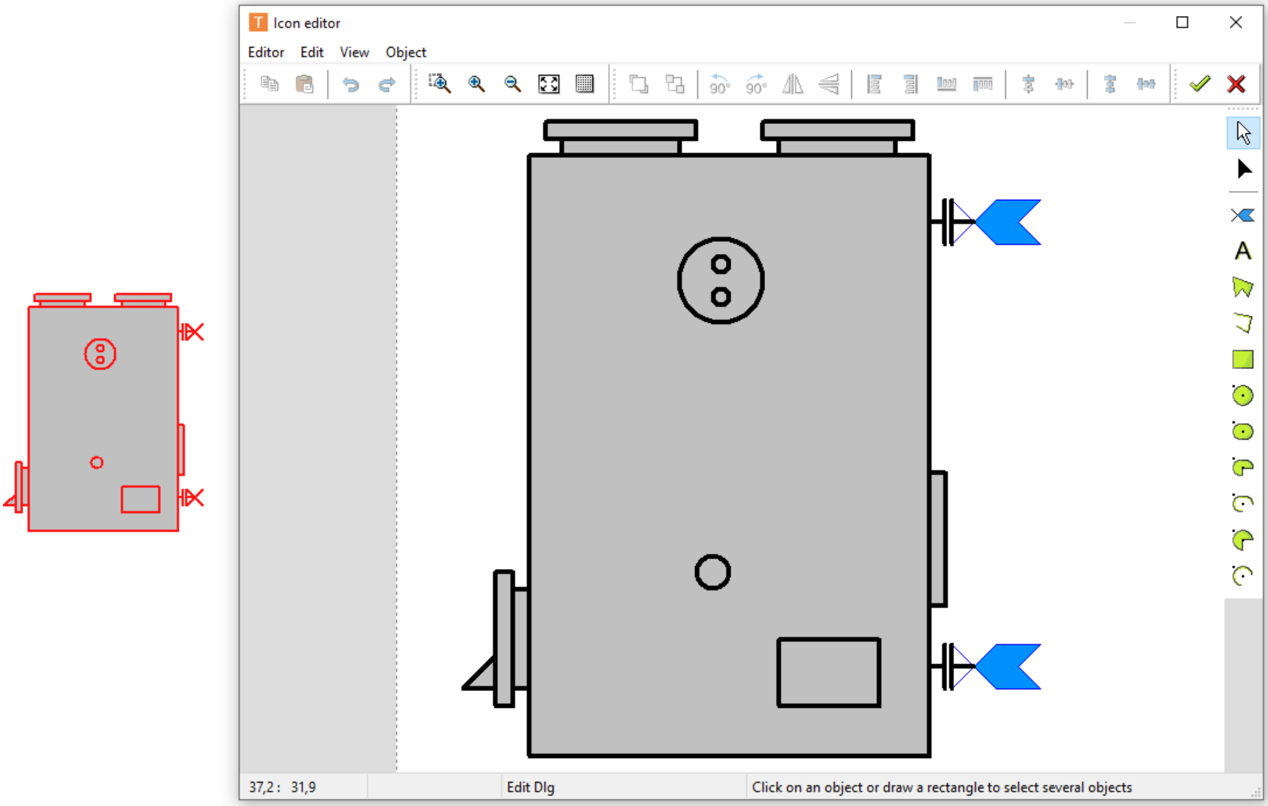


The new element can then be set up. This must firstly be given a **name**, then the **Icon editor** opens.

Icon editor

The "**Icon editor**" opens when new personalised elements are created or an element in the drawing area is **double clicked.**

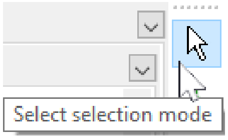
Example – "Solid fuel boiler":



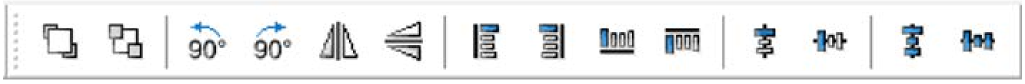
If you want to edit a **standard element** and save it as a **personalised element**, right-click the standard icon in the list to *duplicate* it.

Alternatively, you can first position the standard element and then double-click on it to open the editor shown above. An edited icon can be saved to a personalised library under *Editor → Save as + Exit*.

Selection mode



Single, selected elements can be brought forward or backward, rotated, flipped or aligned using the **toolbar at the top**.

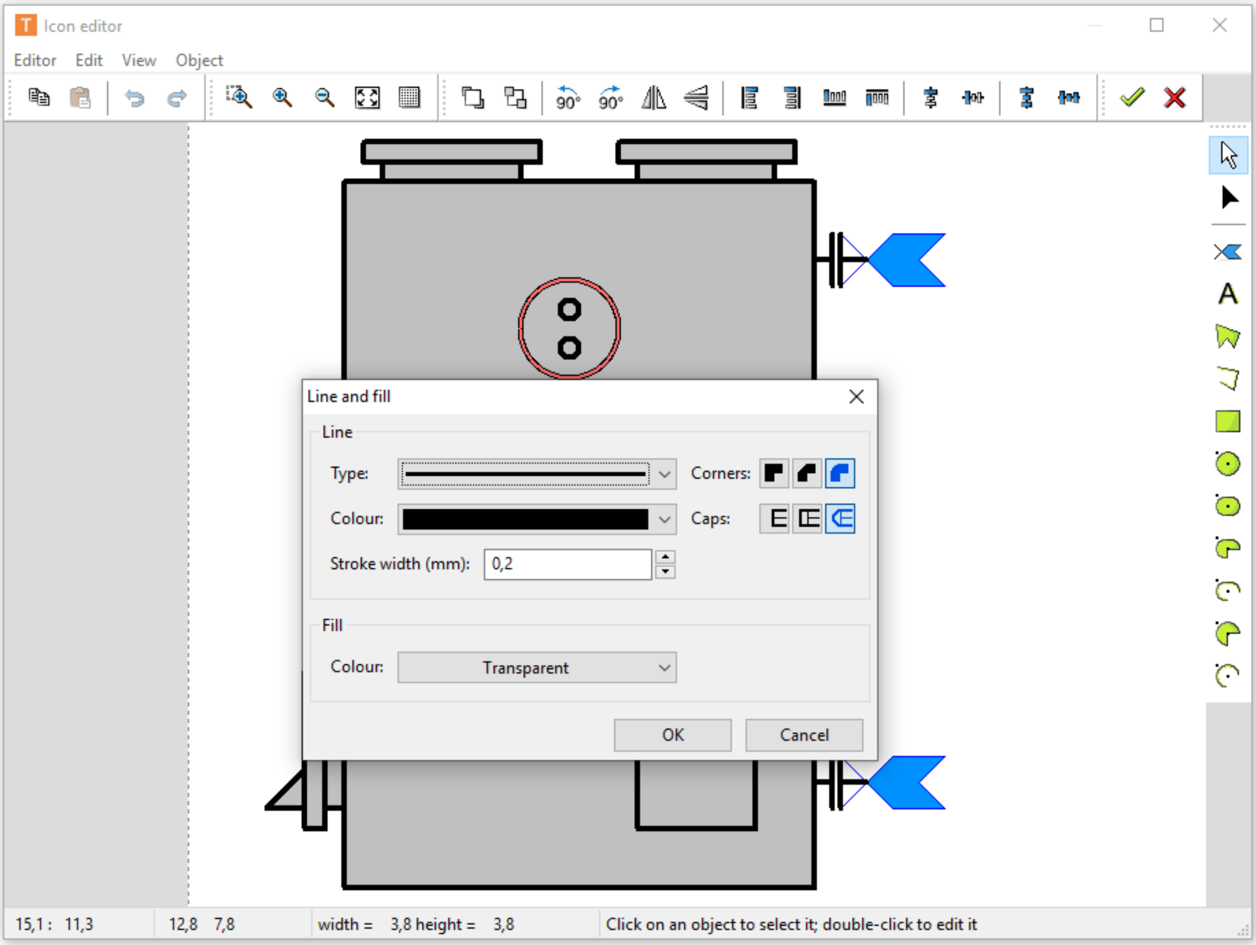


Further drawing elements (lines, rectangles, circles, arcs, ellipses, texts) can also be inserted using the **toolbar on the right**.

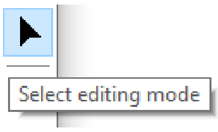
In **selection mode**, **double clicking** a line or an area element (e.g. circle) enables you to change the type, colour and shape of the line or the fill colour of the area element:

Example: Circle in the boiler

The element that has been clicked is highlighted (red)

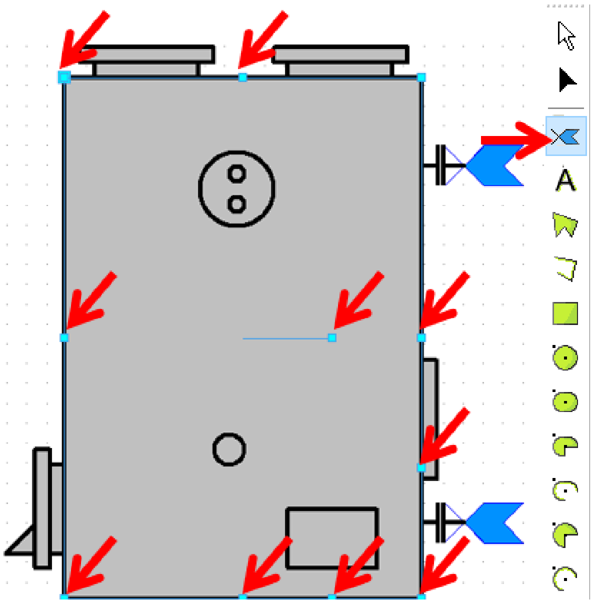


Editor mode



In **editor mode**, the **shape** of individual elements of the icon can be edited.

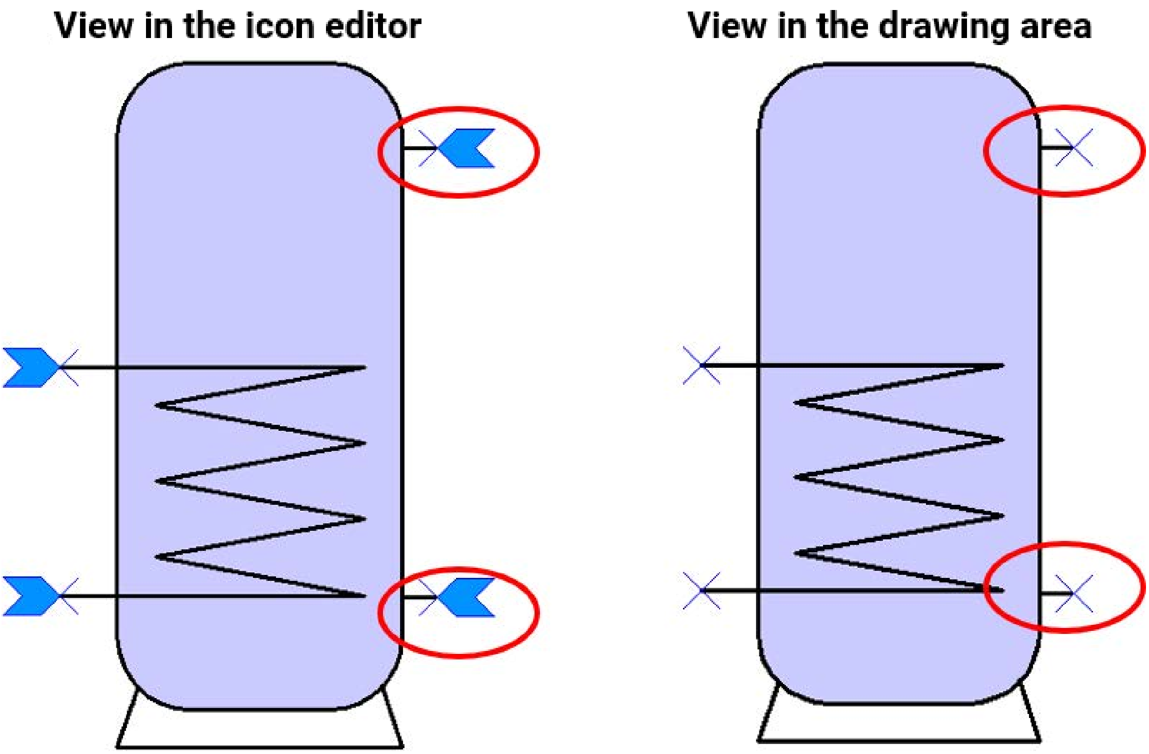
Example: Solid fuel boiler



Click the rectangle in **editor mode**. Now the shape can be changed by dragging the displayed marker points.

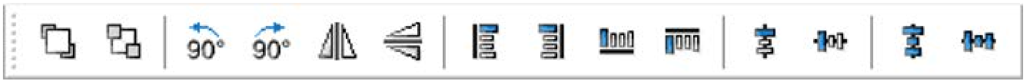
"**Pins**" are a special feature. These are connecting points for lines, which enable a precise link to the elements.

Example: Extending the cylinder icon using 2 pins



This amended icon could now be copied and saved as a new library element in a **personalised library**.

Selected elements can be brought forward or backward, rotated, flipped or aligned using the toolbar at the top.



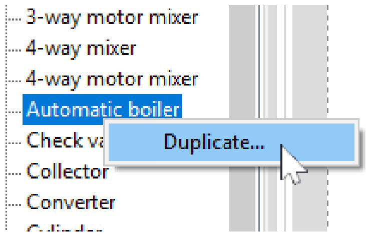
Texts are inserted in the same way as described under "**Programming**".

Every change or new action can be reversed or restored using "**Undo**" or "**Redo**".

Every change in the **Icon editor** must be completed with the tick  .

If the changes should not be saved, click  .

Duplicating elements



Elements can be duplicated by clicking the right mouse button. Elements from standard libraries and personalised libraries can be duplicated, but the duplicated element is always saved in a personalised library.

Creating a hydraulic drawing

In addition to the hydraulic icons, **further drawing elements** (lines, rectangles, polygons, texts) can be inserted and edited using the **toolbar on the right.**

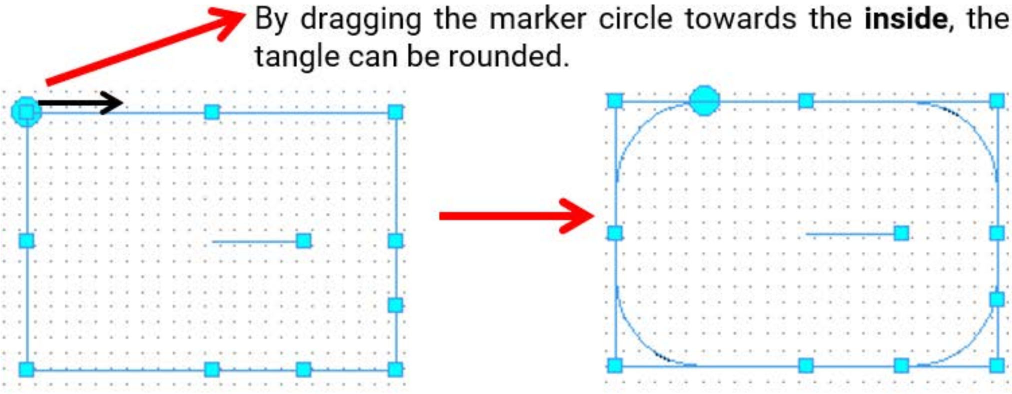
Example: Rectangle

Once the rectangle has been inserted and „drawn“, you are in **editor mode.** Editor mode is recognisable by the shape of the cursor: +

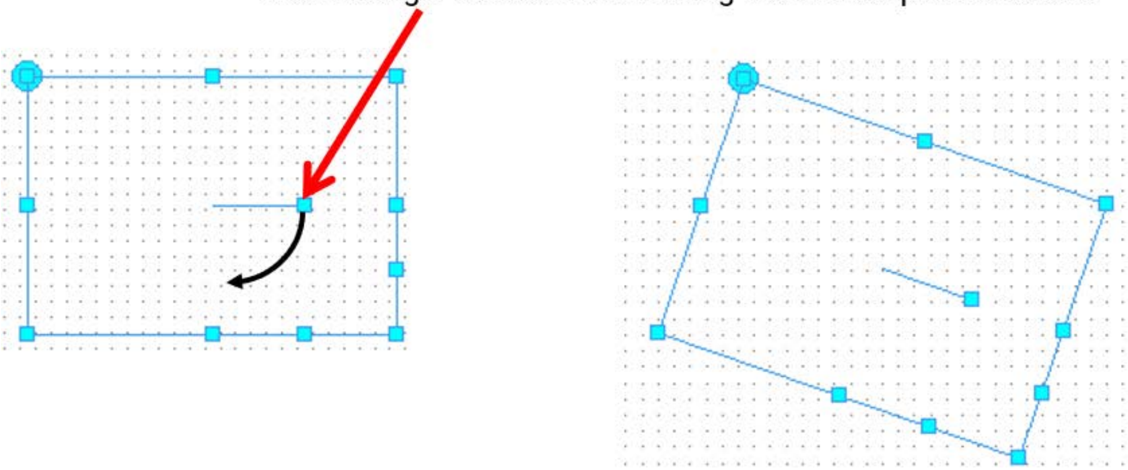
An object which has already been inserted can be edited further by starting editor mode in the toolbar on the right and clicking the object.

The shape of the rectangle can be changed by dragging the marker points

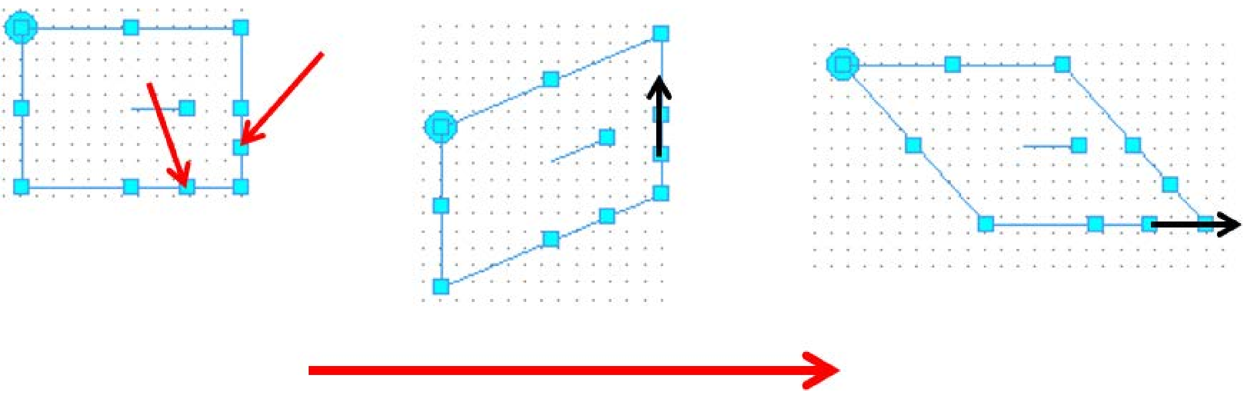
By dragging the marker circle towards the **inside**, the corners of the rectangle can be rounded.



The rectangle can be rotated using the marker point **inside** it.

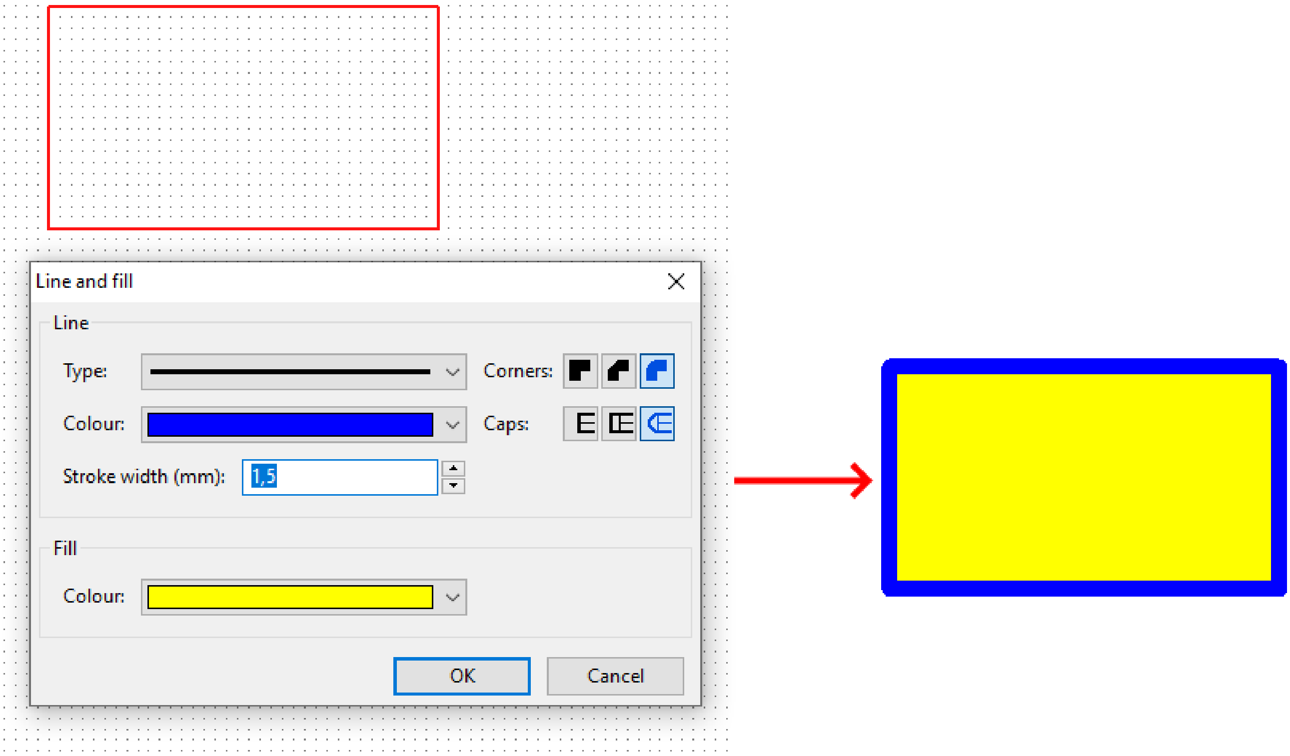


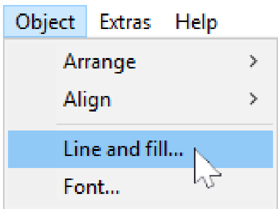
If one of these marker points is dragged, rhombuses are created.



The line type, colour and thickness, as well as the shape and fill colour can be changed by double clicking the rectangle in **selection mode.**

Example:



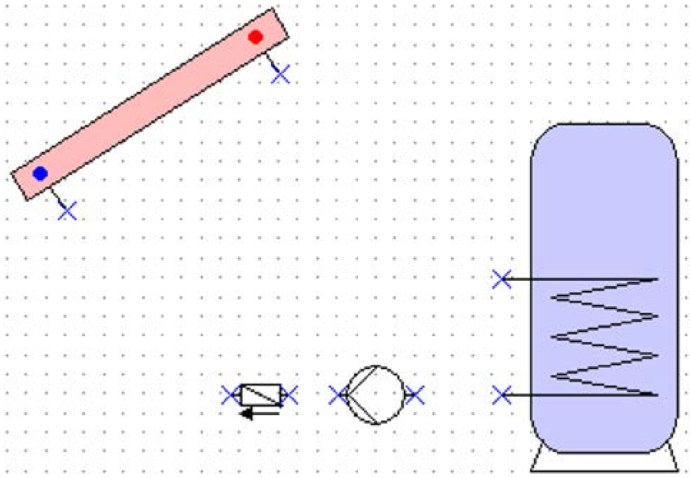


A global setting for these elements can be selected for **all hydraulic drawings** via the menu item **„Object/line and fill...“.** These settings are retained, even if the program is restarted.

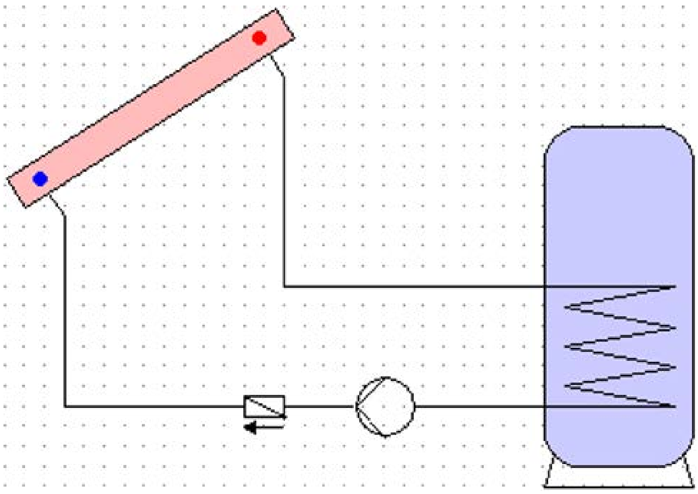
Example of a simple hydraulic drawing

As an example, the individual steps for creating a simple hydraulic drawing (solar thermal system) are described below.

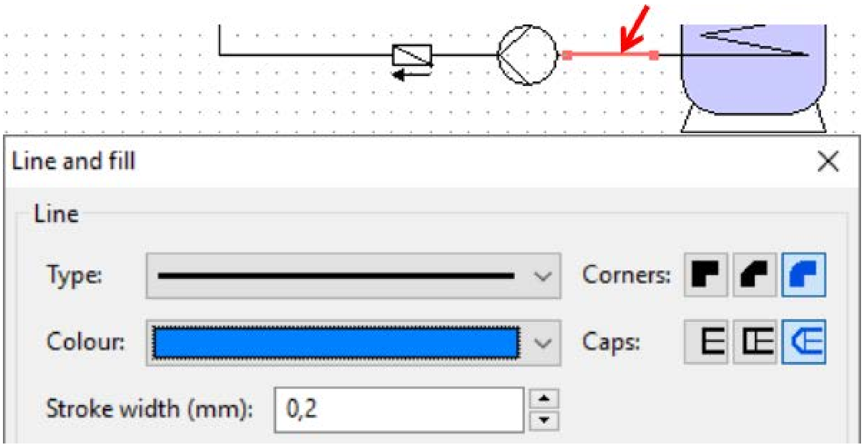
1. Place the **hydraulic icons** „Collector“, „Cylinder“, „Pump“ and „Check valve“ in the drawing area by dragging them from the search tree and aligning them on the grid.



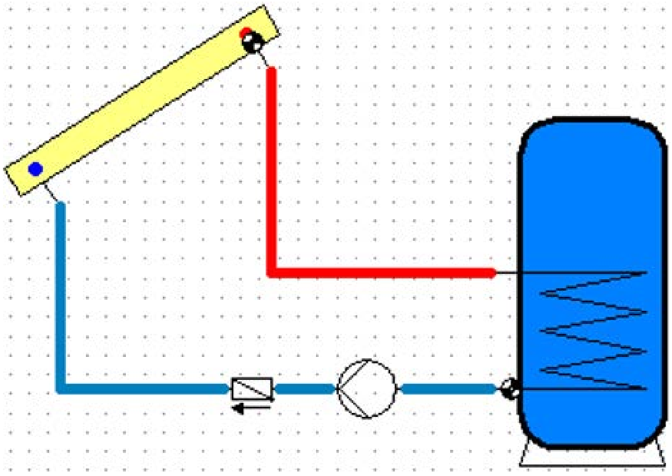
2. Create the **link lines** between the **pins** as described under „Programming“.



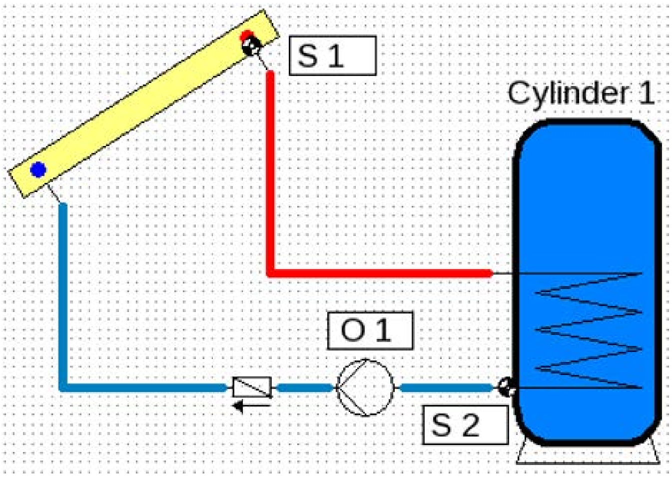
3. **Optional:** Edit the lines and areas (colour/line thickness) by double clicking the element or going to the Icon editor.



View after editing lines and hydraulic elements:



4. Adding sensors and designations



5. Finalise by saving

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